

## CHAPTER 4

### POINT AND NONPOINT SOURCE CHARACTERIZATION OF THE LOWER DUCK RIVER WATERSHED

#### 4.1 Background.

#### 4.2. Characterization of HUC-10 Subwatersheds

- 4.2.A. 0604000301 (Duck River)
- 4.2.B. 0604000302 (Rutherford Fork)
- 4.2.C. 0604000303 (Big Bigby Creek)
- 4.2.D. 0604000304 (Lick Creek)
- 4.2.E. 0604000305 (Duck River)
- 4.2.F. 0604000306 (Big Swan Creek)
- 4.2.G. 0604000307 (Piney River)
- 4.2.H. 0604000308 (Beaverdam Creek)
- 4.2.I. 0604000309 (Hurricane Creek)

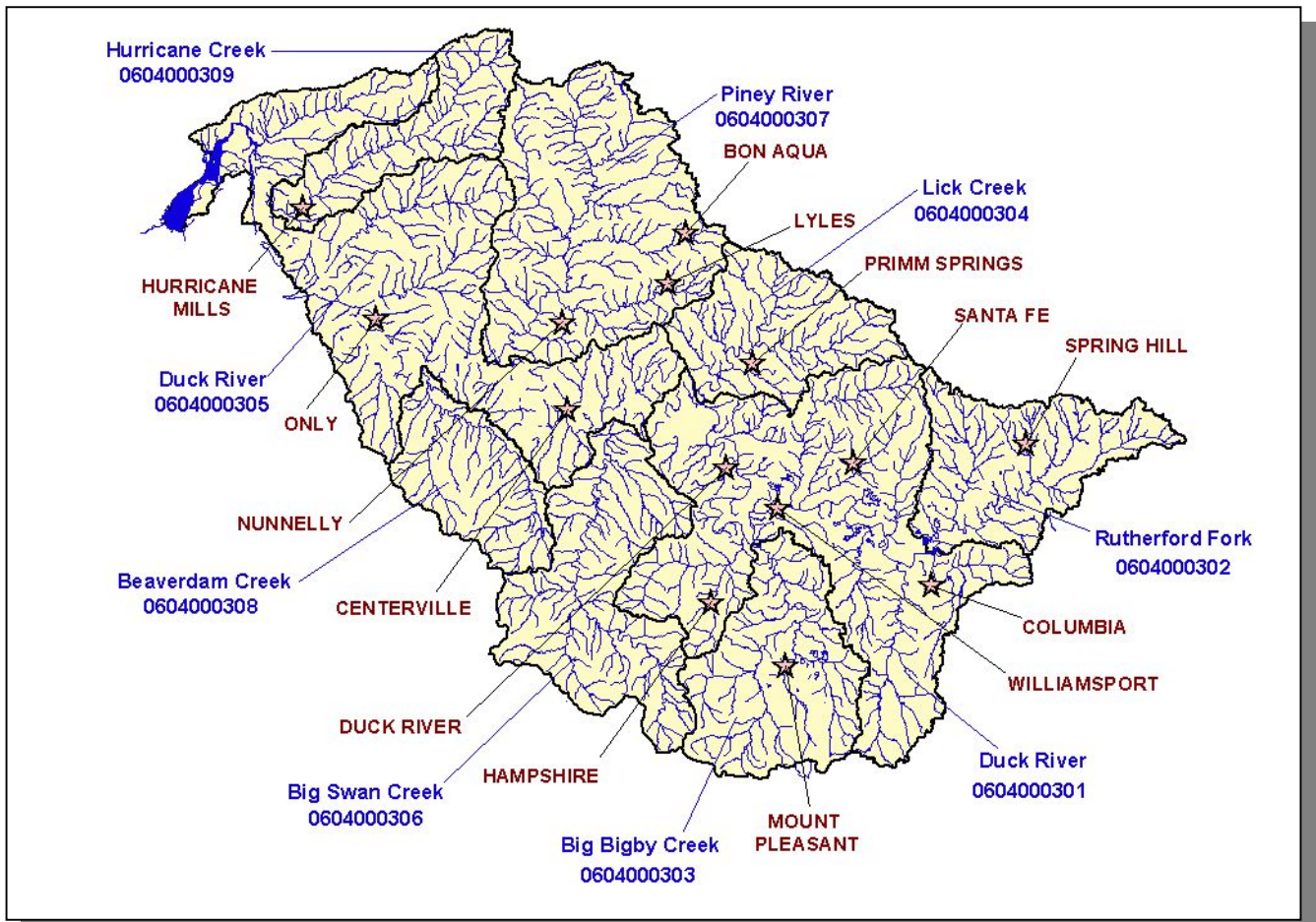
**4.1. BACKGROUND.** This chapter is organized by HUC-10 subwatershed, and the description of each subwatershed is divided into four parts:

- i. General description of the subwatershed
- ii. Description of point source contributions
- ii.a. Description of facilities discharging to water bodies listed on the 2002 303(d) list
- iii. Description of nonpoint source contributions

The Lower Duck River Watershed (HUC 06040003) has been delineated into nine HUC 10-digit subwatersheds.

Information for this chapter was obtained from databases maintained by the Division of Water Pollution Control or provided in the WCS (Watershed Characterization System) data set. The WCS used was version 2.0 (developed by Tetra Tech, Inc for EPA Region 4) released in 2003.

WCS integrates with ArcView® v3.x and Spatial Analyst® v1.1 to analyze user-delineated (sub)watersheds based on hydrologically connected water bodies. Reports are generated by integrating WCS with Microsoft® Word. Land Use/Land Cover information from 1992 MRLC (Multi-Resolution Land Cover) data are calculated based on the proportion of county-based land use/land cover in user-delineated (sub)watersheds. Nonpoint source data in WCS are based on agricultural census data collected 1992–1998; nonpoint source data were reviewed by Tennessee NRCS staff.



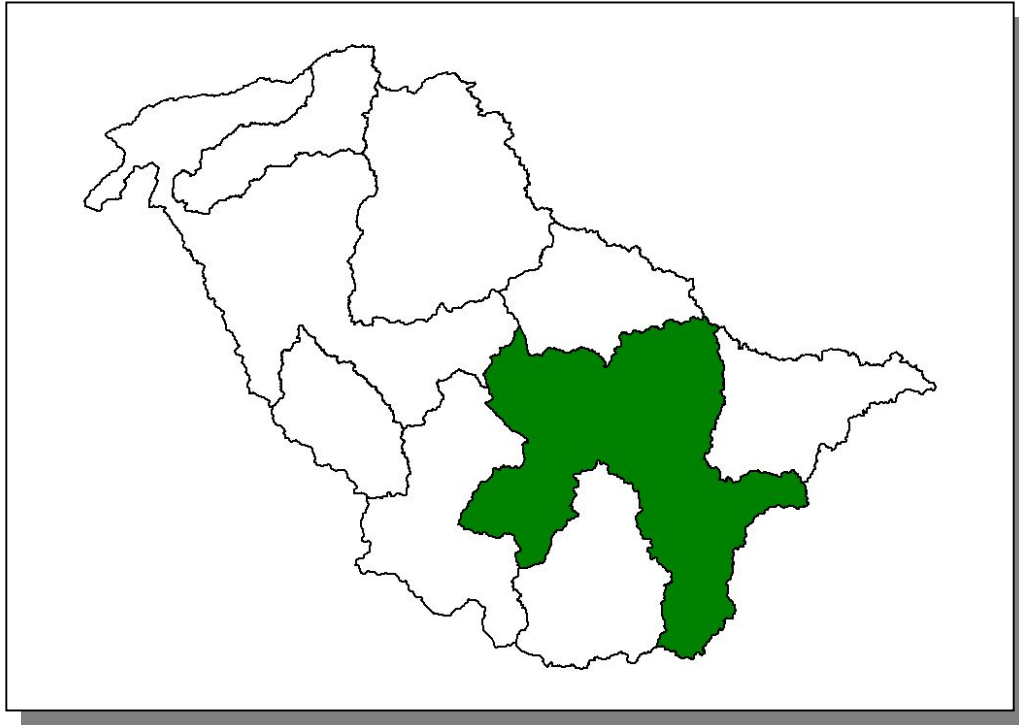
**Figure 4-1. The Lower Duck River Watershed is Composed of Nine USGS-Delineated Subwatersheds (10-Digit Subwatersheds).** Locations of Bon Aqua, Centerville, Columbia, Duck River, Hampshire, Hurricane Mills, Lyles, Mount Pleasant, Nunnelly, Only, Primm Springs, Santa Fe, Spring Hill and Williamsport are shown for reference.

**4.2. CHARACTERIZATION OF HUC-10 SUBWATERSHEDS.** The Watershed Characterization System (WCS) software and data sets provided by EPA Region IV were used to characterize each subwatershed in the Lower Duck River Watershed.

HUC-10	HUC-12	
0604000301	060400030101 (Duck River)	060400030105 (Snow Creek)
	060400030102 (Little Bigby Creek)	060400030106 (Leipers Creek)
	060400030103 (Duck River)	060400030107 (Duck River)
	060400030104 (Knob Creek)	060400030108 (Catheys Creek)
0604000302	060400030201 (Upper Rutherford Fork)	060400030203 (Carters Creek)
	060400030202 (Lower Rutherford Fork)	
0604000303	060400030301 (Upper Big Bigby Creek)	060400030303 (Sugar Creek)
	060400030302 (Lower Big Bigby Creek)	
0604000304	060400030401 (Upper Lick Creek)	060400030402 (Lower Lick Creek)
0604000305	060400030501 (Duck River)	060400030505 (Duck River)
	060400030502 (Duck River)	060400030506 (Tumbling Creek)
	060400030503 (Duck River)	060400030507 (Blue Creek)
	060400030504 (Sugar Creek)	
0604000306	060400030601 (Upper Big Swan Creek)	060400030603 (Lower Big Swan Creek)
	060400030602 (Middle Big Swan Creek)	
0604000307	060400030701 (Upper Piney River)	060400030704 (Middle Piney River)
	060400030702 (Lower Piney River)	060400030705 (Mill Creek)
	060400030703 (Garners Creek)	
0604000308	060400030801 (Beaverdam Creek)	060400030802 (Sulpher Fork Creek)
0604000309	060400030901 (Upper Hurricane Creek)	060400030902 (Lower Hurricane Creek)

**Table 4-1. HUC-12 Drainage Areas are Nested Within HUC-10 Drainages.** NRCS worked with USGS to delineate the HUC-10 and HUC-12 drainage boundaries.

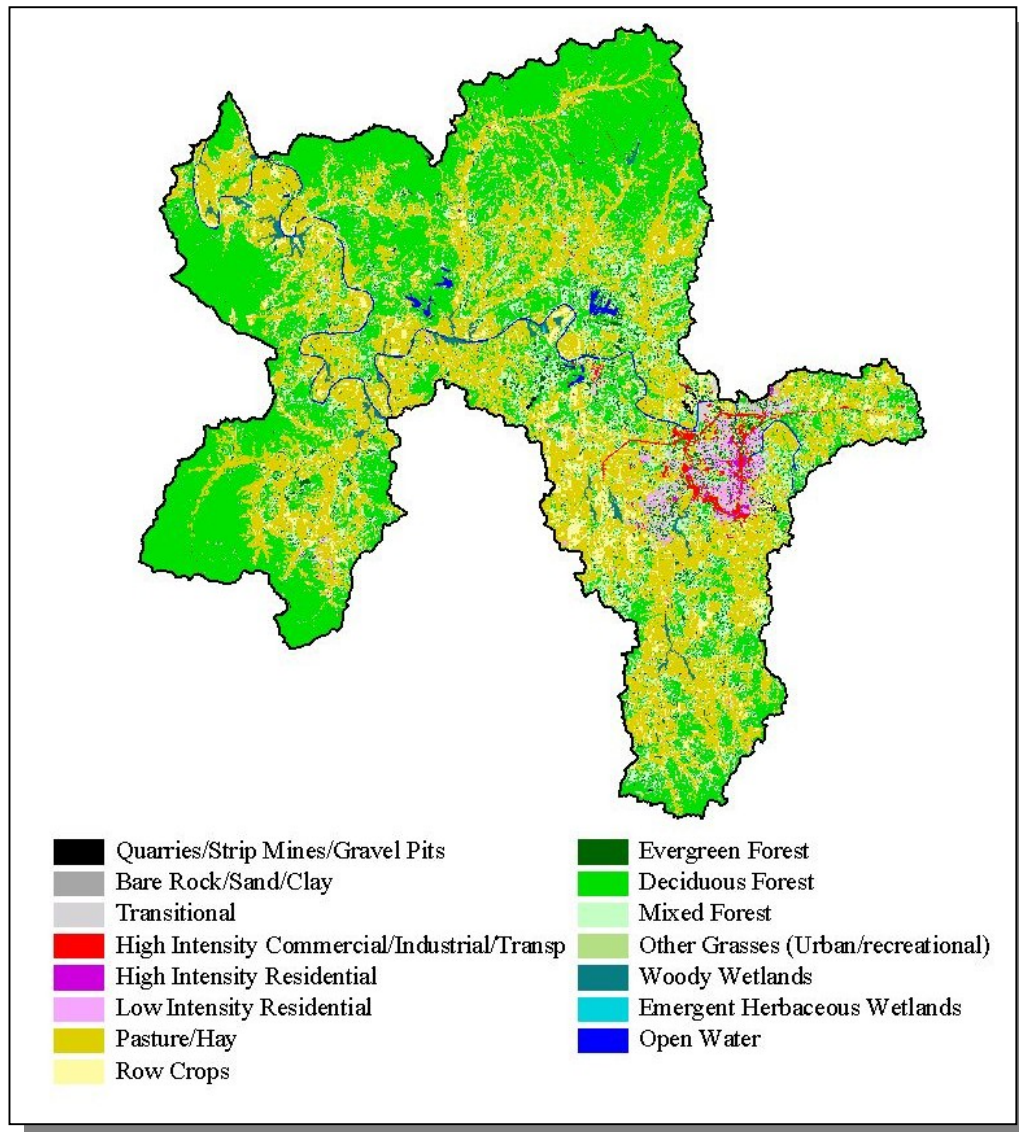
**4.2.A. 0604000301 (Duck River).**



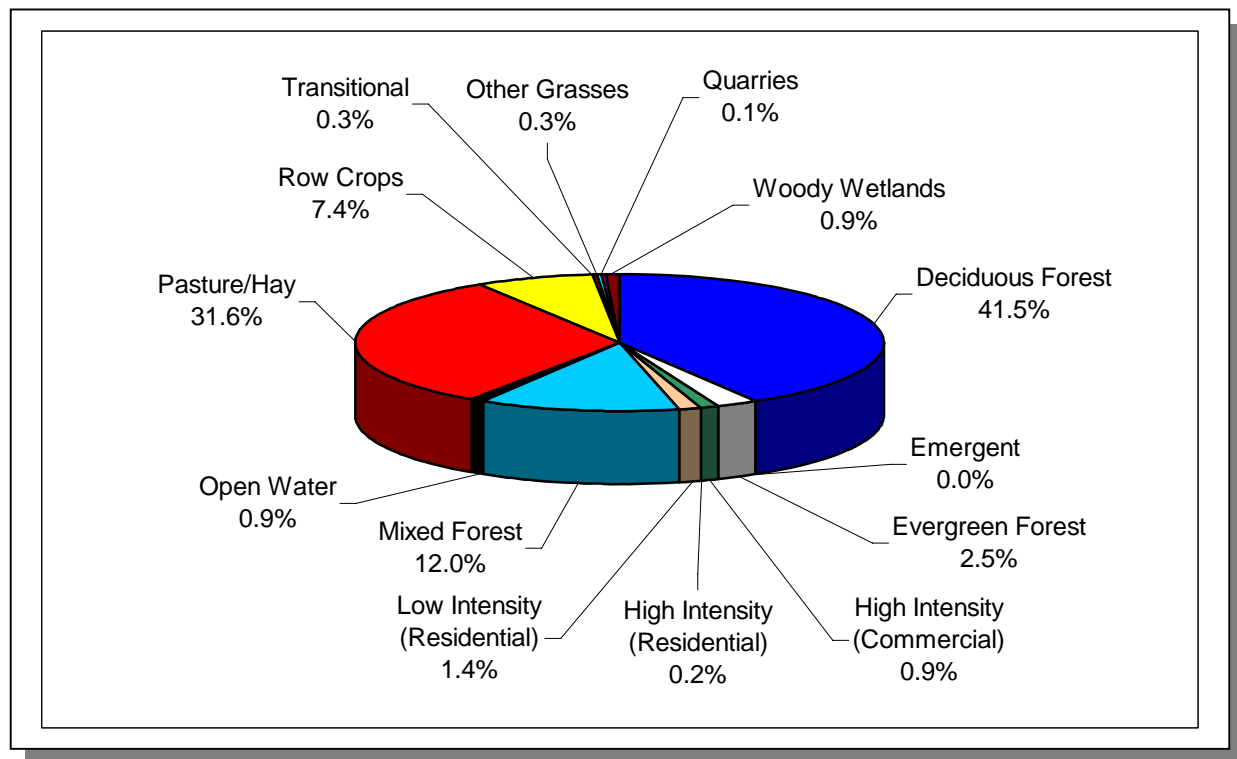
**Figure 4-2. Location of Subwatershed 0604000301.** All Lower Duck HUC-10 subwatershed boundaries are shown for reference.



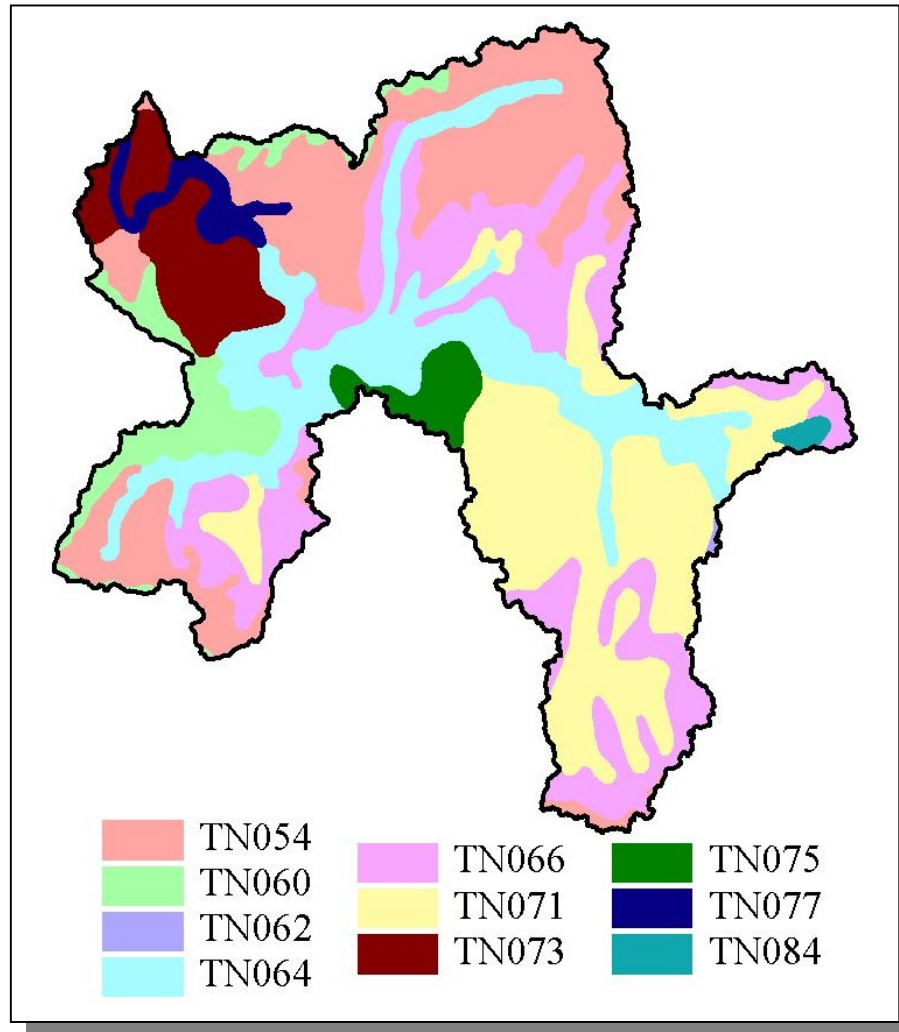
**4.2.A.i. General Description.**



**Figure 4-3. Illustration of Land Use Distribution in Subwatershed 0604000301.**



**Figure 4-4. Land Use Distribution in Subwatershed 0604000301.** More information is provided in Appendix IV.



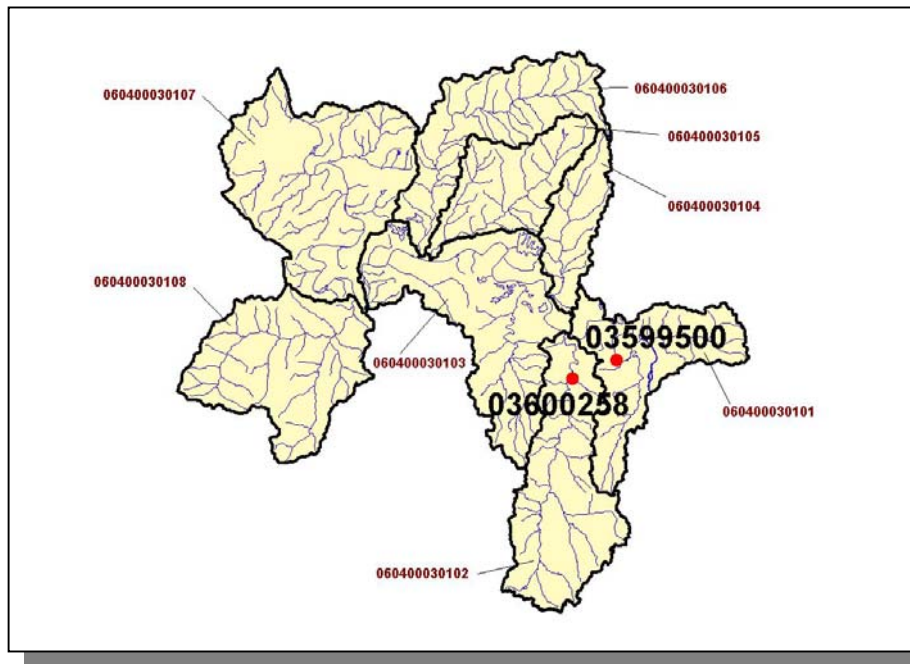
**Figure 4-5. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000301.**

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN054	0.00	C	3.04	4.84	Loam	0.32
TN060	5.00	B	1.30	5.32	Silty Loam	0.39
TN062	0.00	C	0.98	4.40	Clayey Loam	0.26
TN064	7.00	C	1.19	5.82	Silty Loam	0.37
TN066	0.00	B	2.62	4.75	Loam	0.28
TN071	0.00	C	2.37	5.70	Silty Loam	0.33
TN073	0.00	B	2.97	5.21	Loam	0.34
TN075	0.00	B	1.33	5.24	Loam	0.31
TN077	4.00	C	2.16	5.03	Loam	0.34
TN084	0.00	C	1.80	4.99	Silty Loam	0.28

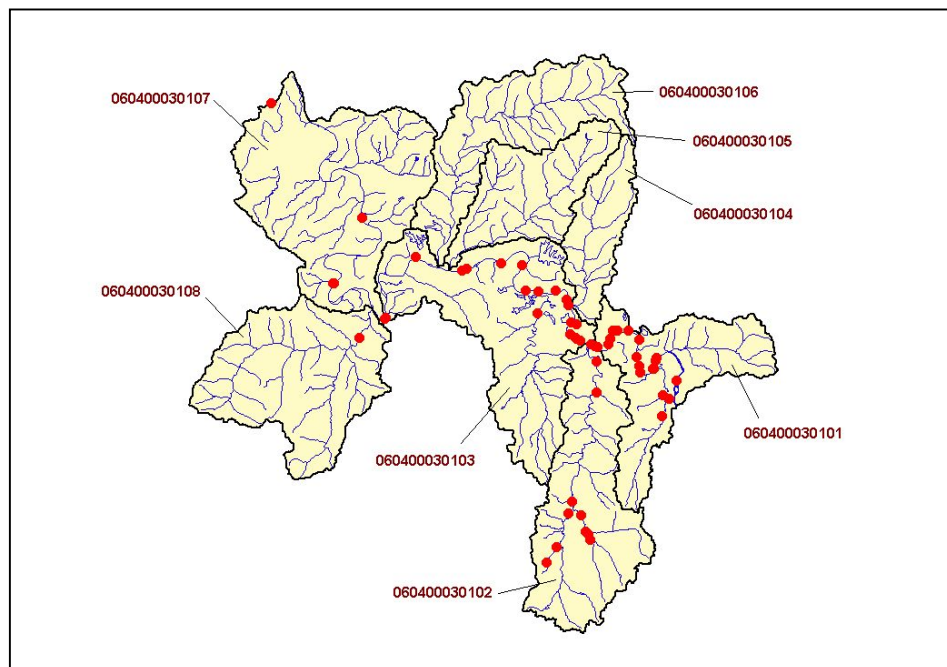
**Table 4-2. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000301.** More details are provided in Appendix IV.

County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-1997)
	1990	1997	2000		1990	1997	2000	
Giles	25,741	28,515	29,447	0.30	76	84	87	14.5
Hickman	16,754	19,926	22,295	8.12	1,360	1,617	1,810	33.1
Lewis	9,247	10,789	11,367	6.33	585	683	719	22.9
Maury	54,812	68,268	69,498	41.98	23,012	28,661	29,177	26.8
Williamson	81,021	111,453	126,638	0.58	467	642	730	56.3
<b>Totals</b>	<b>187,575</b>	<b>238,951</b>	<b>259,245</b>		<b>25,500</b>	<b>31,687</b>	<b>32,523</b>	<b>27.5</b>

*Table 4-3. Population Estimates in Subwatershed 0604000301*

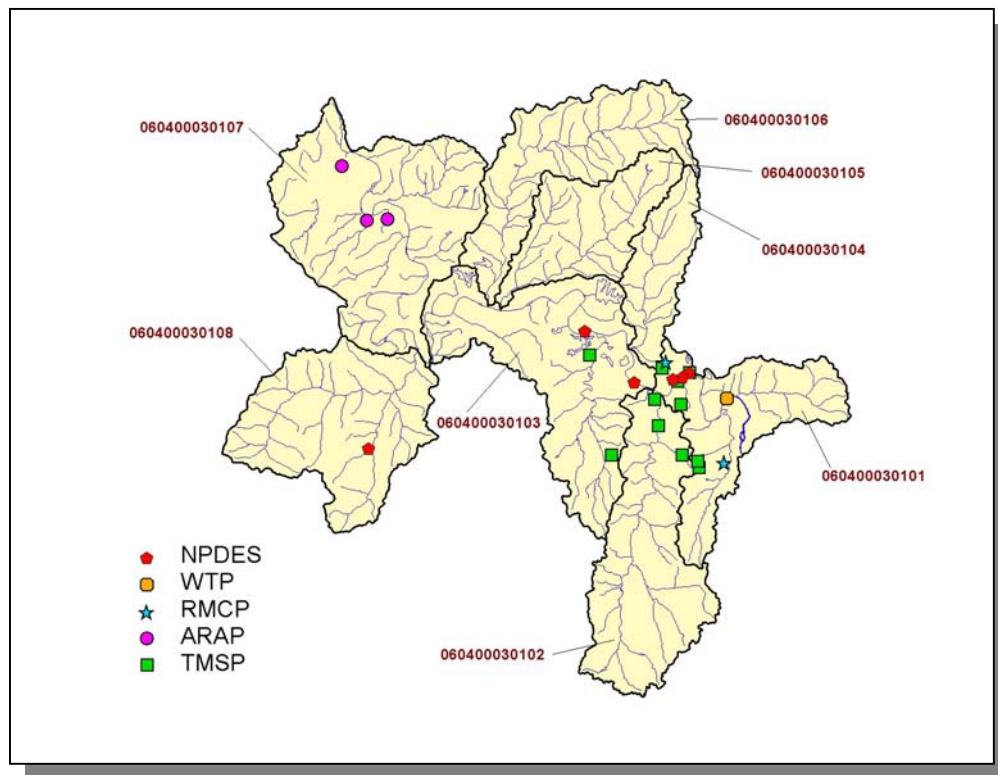


**Figure 4-6. Location of Historical Streamflow Data Collection Sites in Subwatershed 0604000301.** Subwatershed 060400030101, 060400030102, 060400030103, 060400030104, 060400030105, 060400030106, 060400030107 and 060400030108 boundaries are shown for reference. More information is provided in Appendix IV.



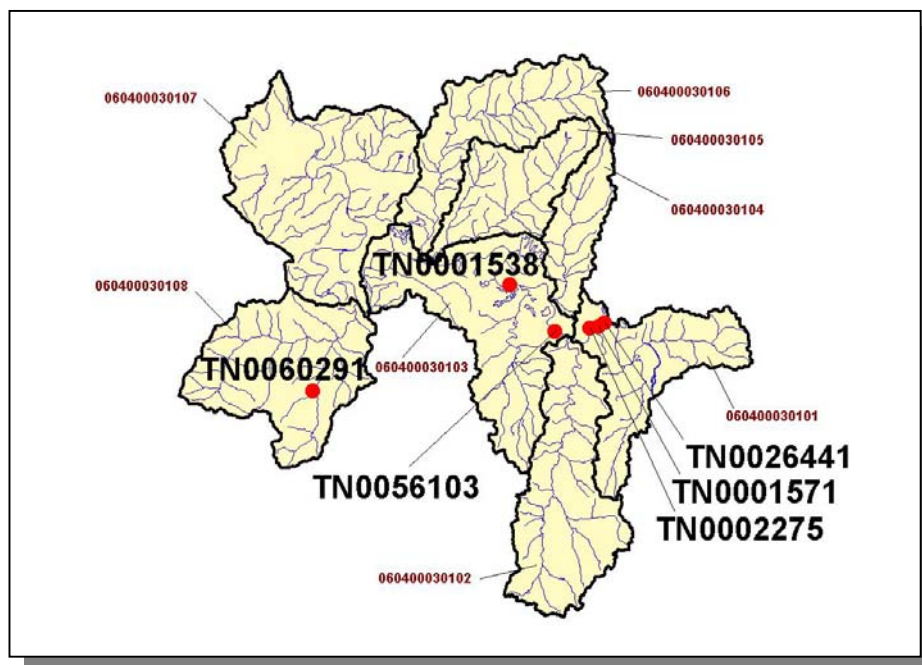
**Figure 4-7. Location of STORET Monitoring Sites in Subwatershed 0604000301.** Subwatershed 060400030101, 060400030102, 060400030103, 060400030104, 060400030105, 060400030106, 060400030107 and 060400030108 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.

4.2.A.ii Point Source Contributions.



**Figure 4-8. Location of Active Point Source Facilities in Subwatershed 0604000301.** Subwatershed 060400030101, 060400030102, 060400030103, 060400030104, 060400030105, 060400030106, 060400030107, and 060400030108 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.

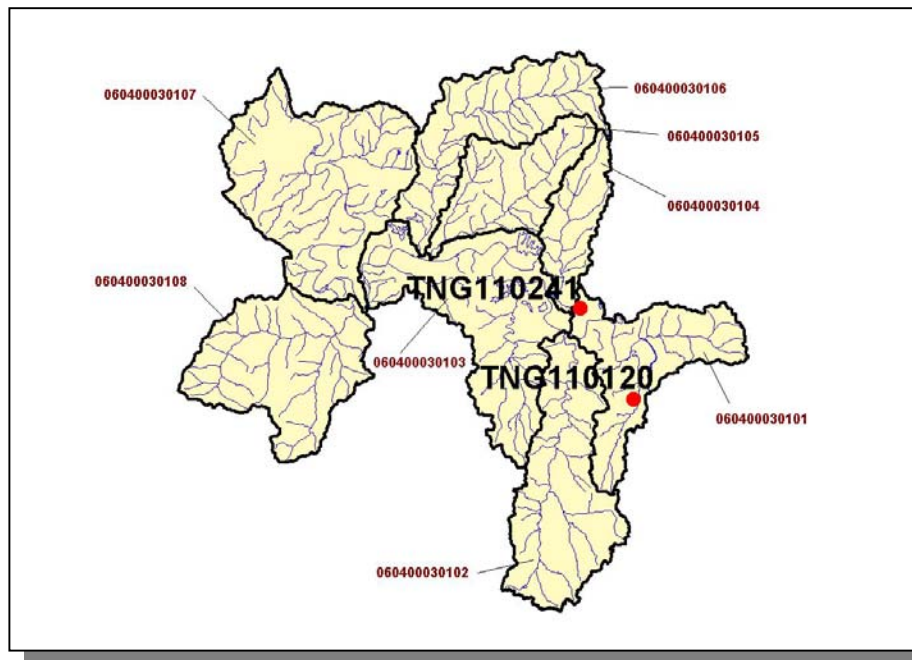




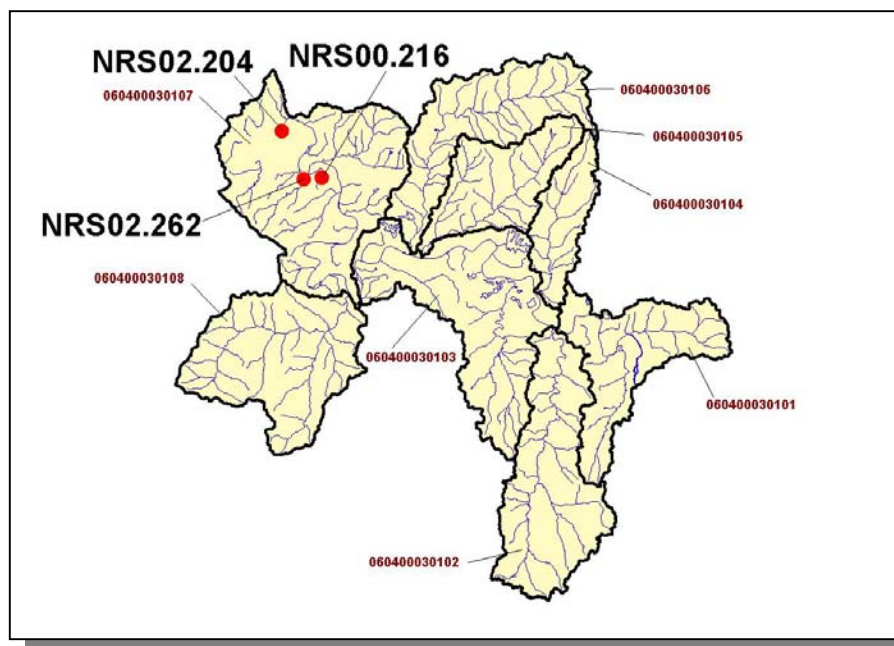
**Figure 4-9. Location of NPDES Facilities in Subwatershed 0604000301.** Subwatershed 060400030101, 060400030102, 060400030103, 060400030104, 060400030105, 060400030106, 060400030107, and 060400030108 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



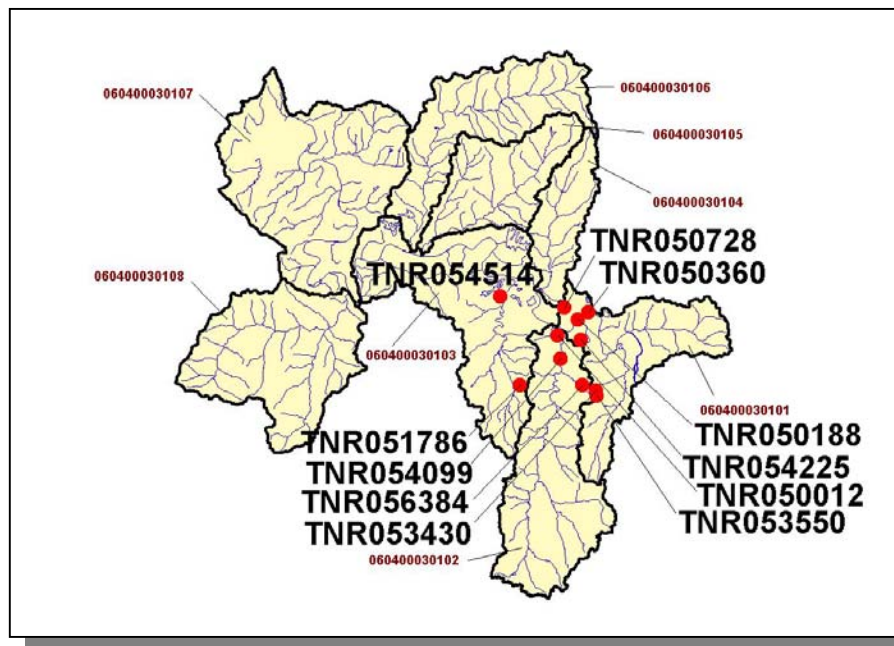
**Figure 4-10. Location of Water Treatment Plants in Subwatershed 0604000301.** Subwatershed 060400030101, 060400030102, 060400030103, 060400030104, 060400030105, 060400030106, 060400030107, and 060400030108 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



**Figure 4-11. Location of Ready Mix Concrete Plants in Subwatershed 0604000301.** Subwatershed 060400030101, 060400030102, 060400030103, 060400030104, 060400030105, 060400030106, 060400030107, and 060400030108 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



**Figure 4-12. Location of ARAP Sites (Individual Permits) in Subwatershed 0604000301.** Subwatershed 060400030101, 060400030102, 060400030103, 060400030104, 060400030105, 060400030106, 060400030107, and 060400030108 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



**Figure 4-13. Location of TMSF Facilities in Subwatershed 0604000301.** Subwatershed 060400030101, 060400030102, 060400030103, 060400030104, 060400030105, 060400030106, 060400030107, and 060400030108 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.

**4.2.A.iii. Nonpoint Source Contributions.**

<b>LIVESTOCK (COUNTS)</b>						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
15,679	31,683	1,254	43	<5	1,417	165

**Table 4-4. Summary of Livestock Count Estimates in Subwatershed 0604000301.** According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

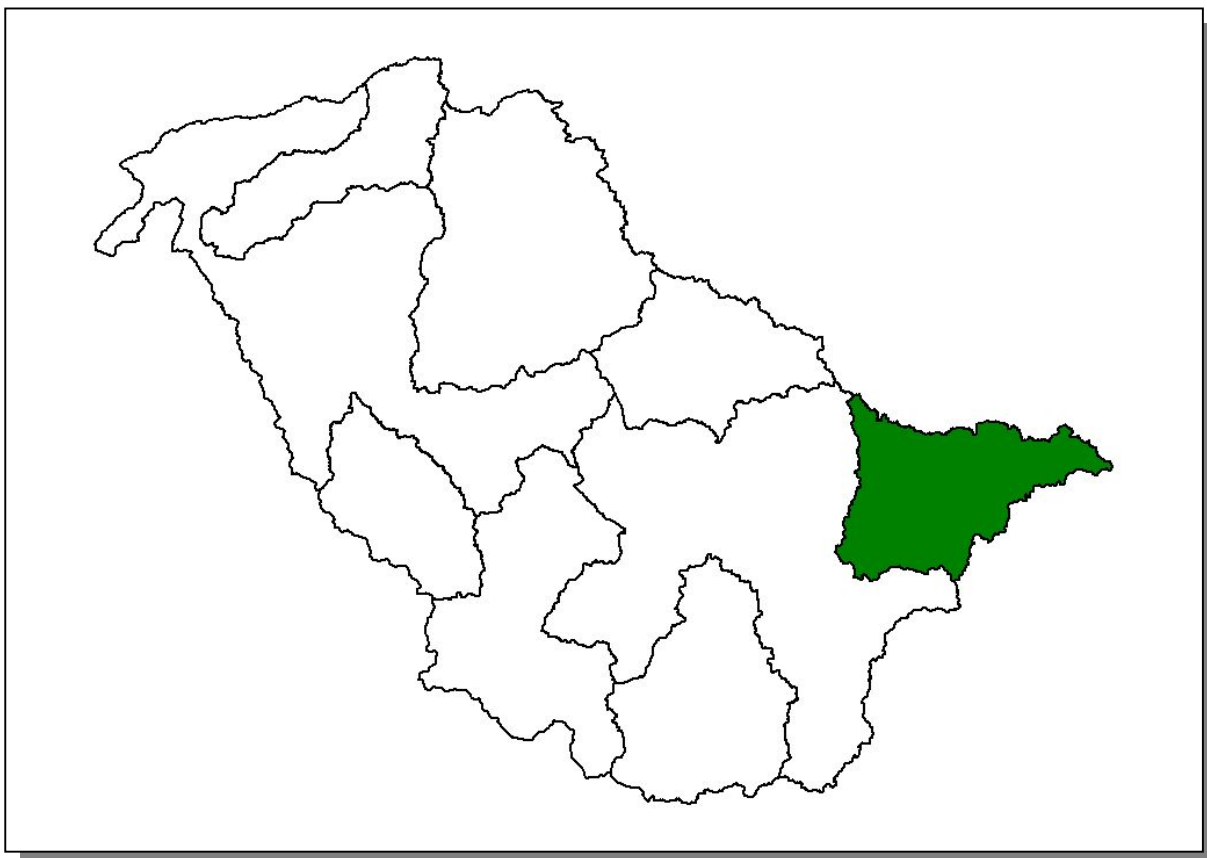
County	<b>INVENTORY</b>		<b>REMOVAL RATE</b>	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Giles	171.8	171.8	3.3	11.4
Hickman	297.2	297.2	5.8	23.0
Lewis	158.00	158.0	4.0	10.2
<b>Total</b>	<b>627.0</b>	<b>627.0</b>	<b>13.1</b>	<b>44.6</b>

**Table 4-5. Forest Acreage and Annual Removal Rates (1987-1994) in Subwatershed 0604000301.**

<b>CROPS</b>	<b>TONS/ACRE/YEAR</b>
Legume (Pastureland)	0.66
Grass (Pastureland)	0.81
Grass (Hayland)	0.28
Legumes (Hayland)	1.05
Legumes, Grass (Hayland)	0.28
Grass, Forbs, Legumes (Mixed Pasture)	0.36
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	4.69
Soybeans (Row Crops)	7.57
Tobacco (Row Crops)	7.62
All Other Row Crops	11.39
Barley (Close-Grown Cropland)	1.08
Wheat (Close-Grown Cropland)	1.49
Summer Fallow (Other Cropland)	0.35
Other Cropland not Planted	4.20
Other Vegetable and Truck Crop	4.29
Conservation Reserve Program Lands	0.49
Non-Agricultural Land Use	0.00
Other Land in Farms	0.12
Farmsteads and Ranch Headquarters	0.39

**Table 4-6. Annual Estimated Total Soil Loss in Subwatershed 0604000301.**

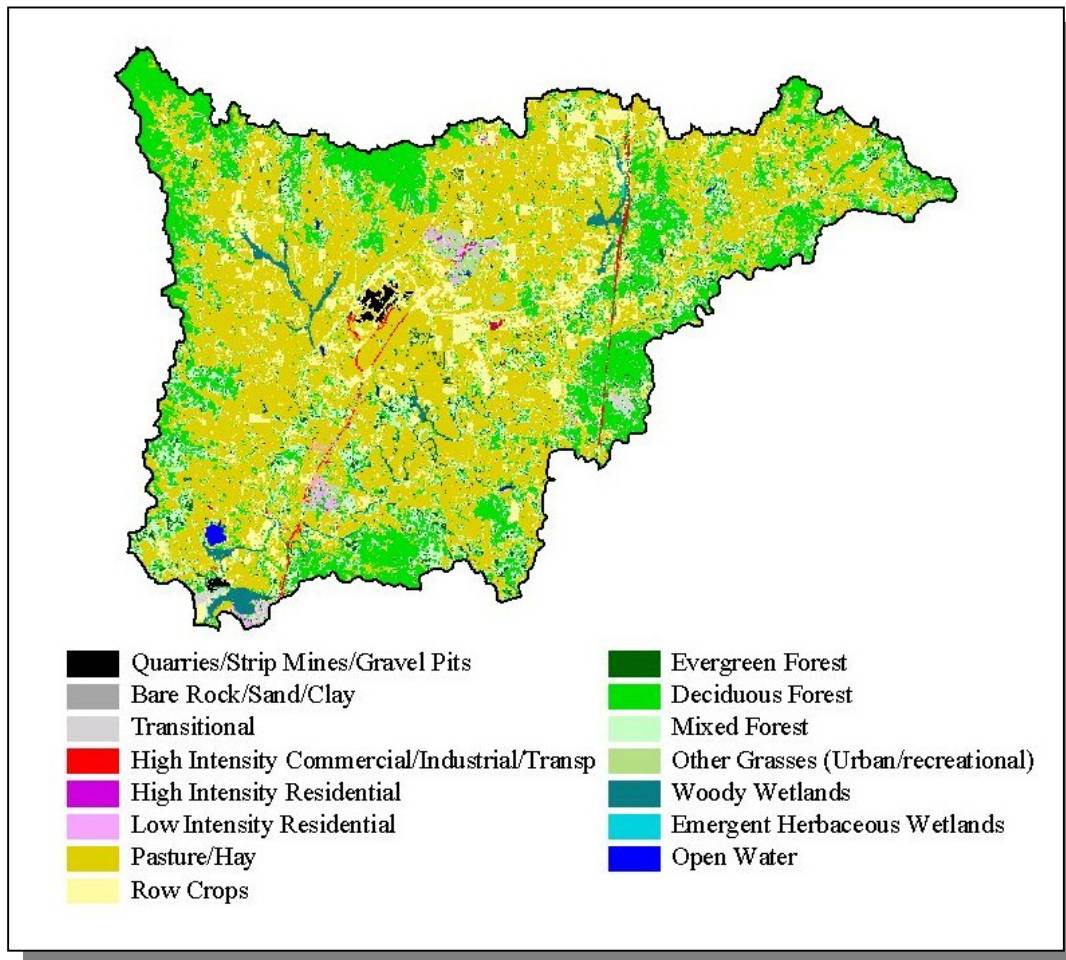
**4.2.B. 0604000302 (Rutherford Fork).**



**Figure 4-14. Location of Subwatershed 0604000302.** All Lower Duck HUC-10 subwatershed boundaries are shown for reference.

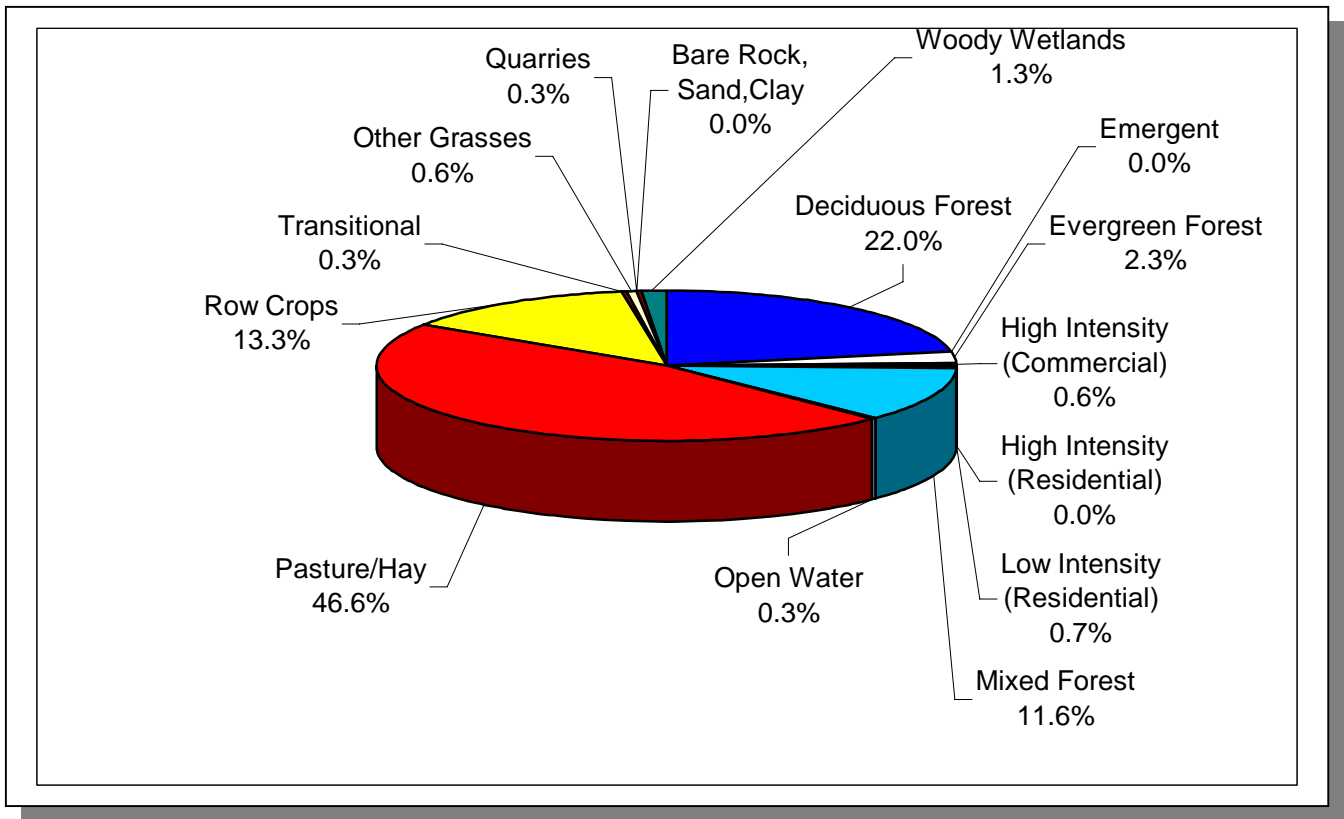


4.2.B.i. General Description.

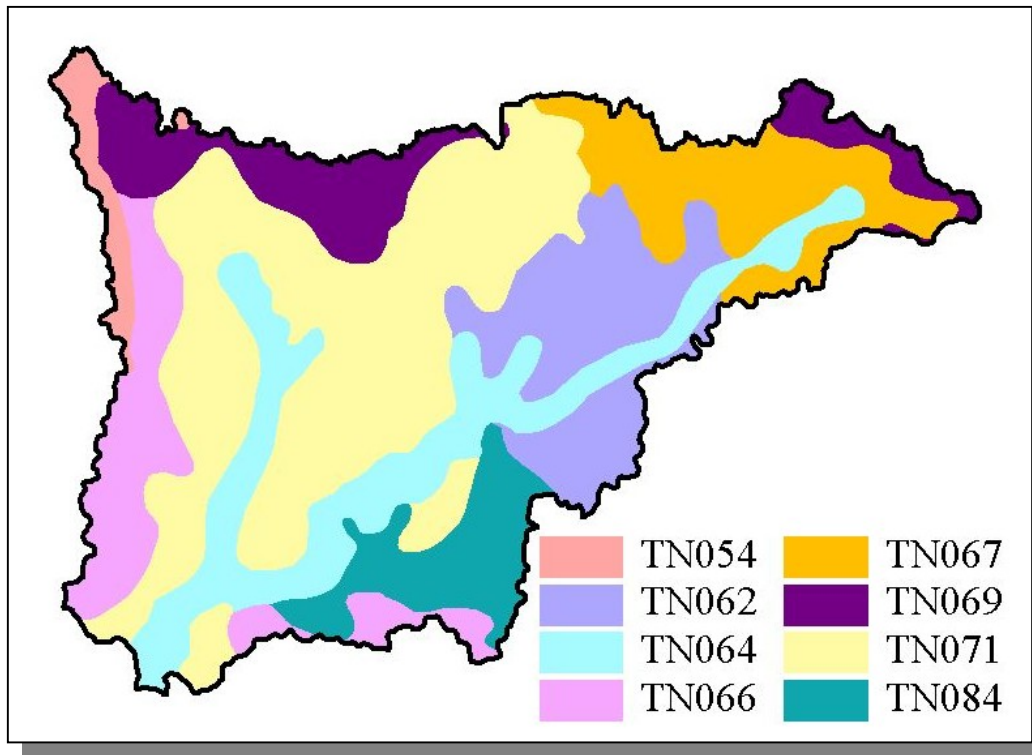


*Figure 4-15. Illustration of Land Use Distribution in Subwatershed 0604000302.*





**Figure 4-16. Land Use Distribution in Subwatershed 0604000302.** More information is provided in Appendix IV.



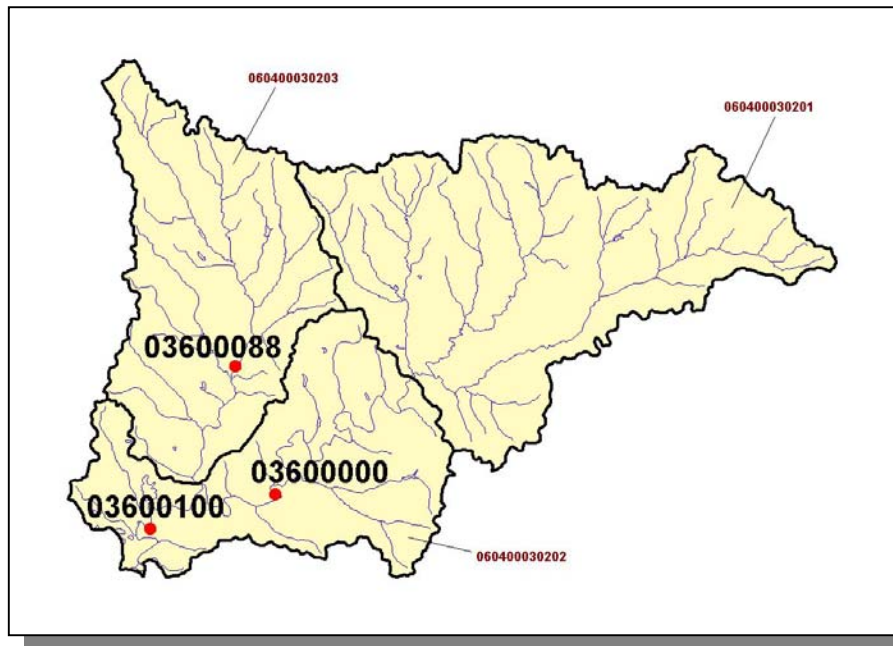
**Figure 4-17. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000302.**

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN054	0.00	C	3.04	4.84	Loam	0.32
TN062	0.00	C	0.98	4.40	Clayey Loam	0.26
TN064	7.00	C	1.19	5.82	Silty Loam	0.37
TN066	0.00	B	2.62	4.75	Loam	0.28
TN067	2.00	C	2.69	5.51	Silty Loam	0.35
TN069	0.00	C	2.06	5.36	Loam	0.34
TN071	0.00	C	2.37	5.70	Silty Loam	0.33
TN084	0.00	C	1.80	4.99	Silty Loam	0.28

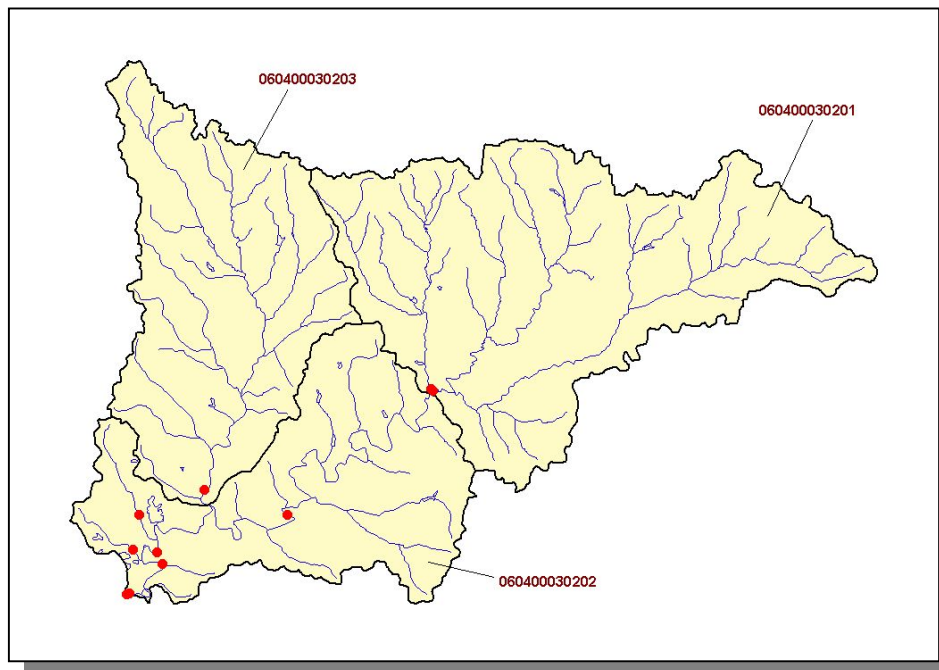
**Table 4-7. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000302.** More information is provided in Appendix IV.

County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-1997)
	1990	1997	2000		1990	1997	2000	
Maury	54,812	68,268	69,498	13.97	7,657	9,536	9,708	26.8
Williamson	81,021	111,453	126,638	5.22	4,235	5,825	6,619	56.3
<b>Totals</b>	<b>135,833</b>	<b>179,721</b>	<b>196,136</b>		<b>11,892</b>	<b>15,361</b>	<b>16,327</b>	<b>37.3</b>

*Table 4-8. Population Estimates in Subwatershed 0604000302.*

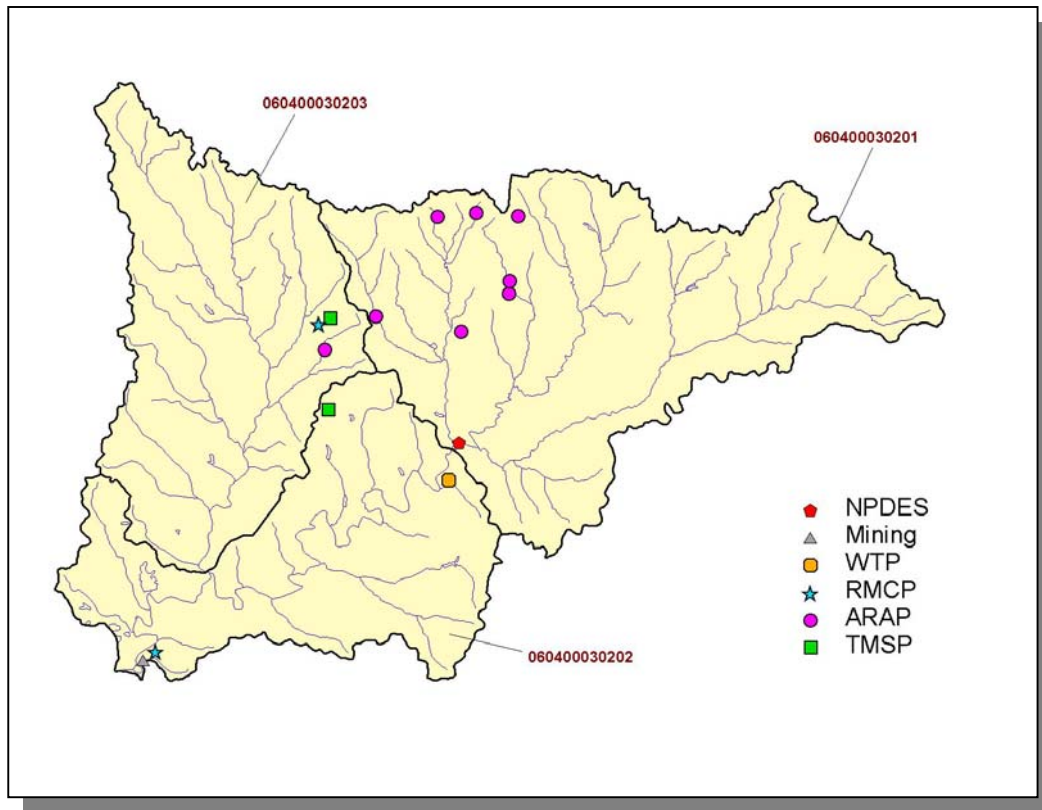


**Figure 4-18. Location of Historical Streamflow Data Collection Sites in Subwatershed 0604000302.** Subwatershed 060400030201, 060400030202, and 060400030203, boundaries are shown for reference. More information is provided in Appendix IV.

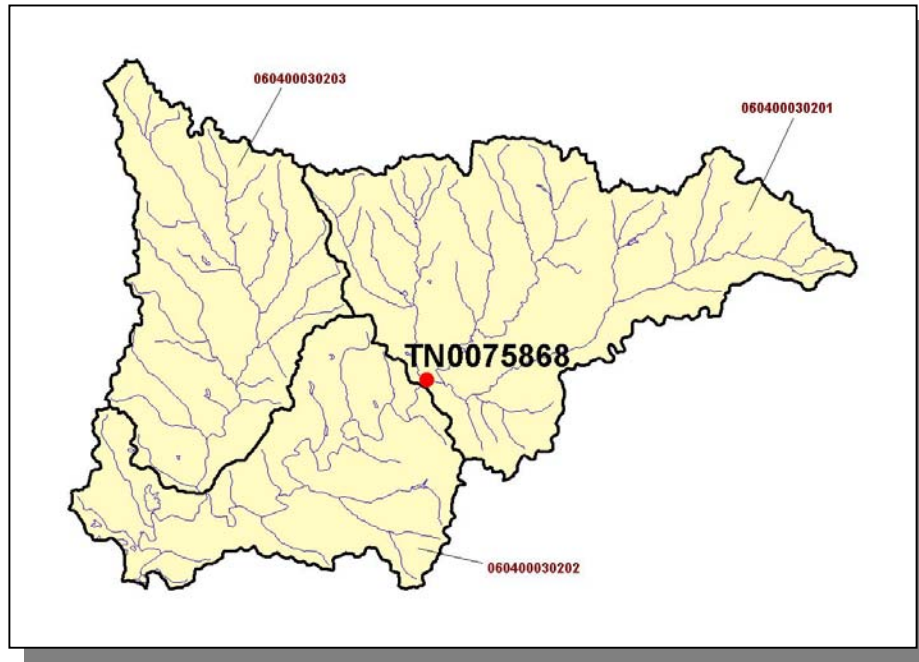


**Figure 4-19. Location of STORET Monitoring Sites in Subwatershed 0604000302.** Subwatershed 060400030201, 060400030202, and 060400030203, boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.

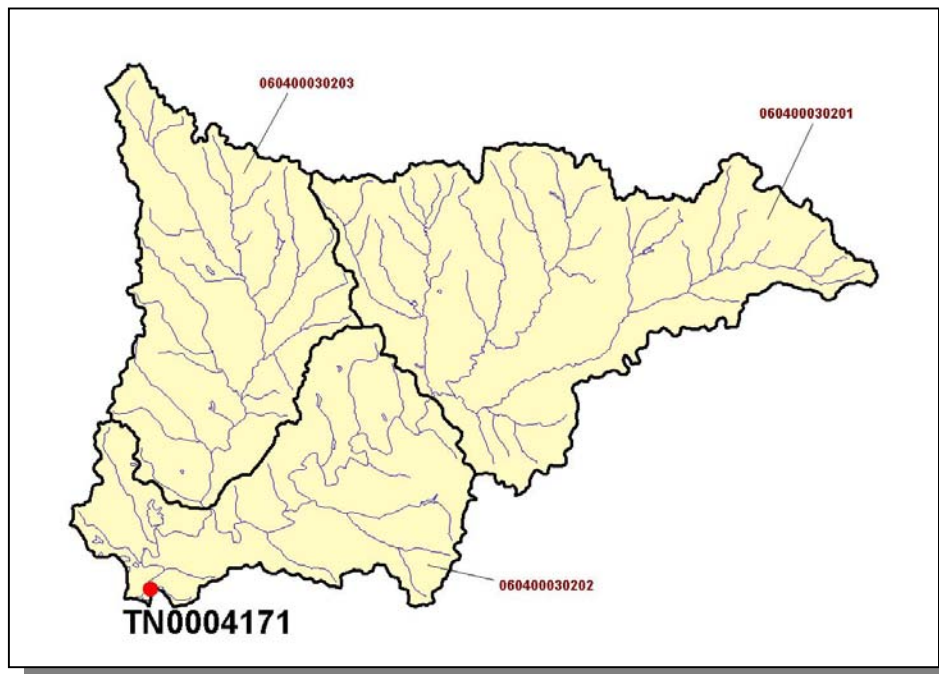
**4.2.B.ii.** Point Source Contributions.



**Figure 4-20. Location of Active Point Source Facilities in Subwatershed 0604000302.** Subwatershed 060400030201, 060400030202, and 060400030203 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.

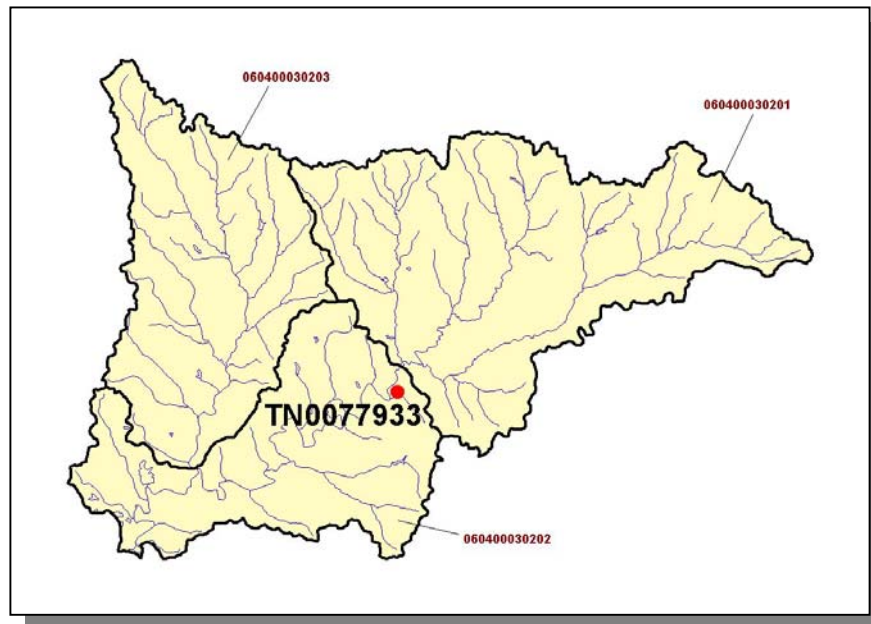


**Figure 4-21. Location of NPDES Facilities in Subwatershed 0604000302.** Subwatershed 060400030201, 060400030202, and 060400030203 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.

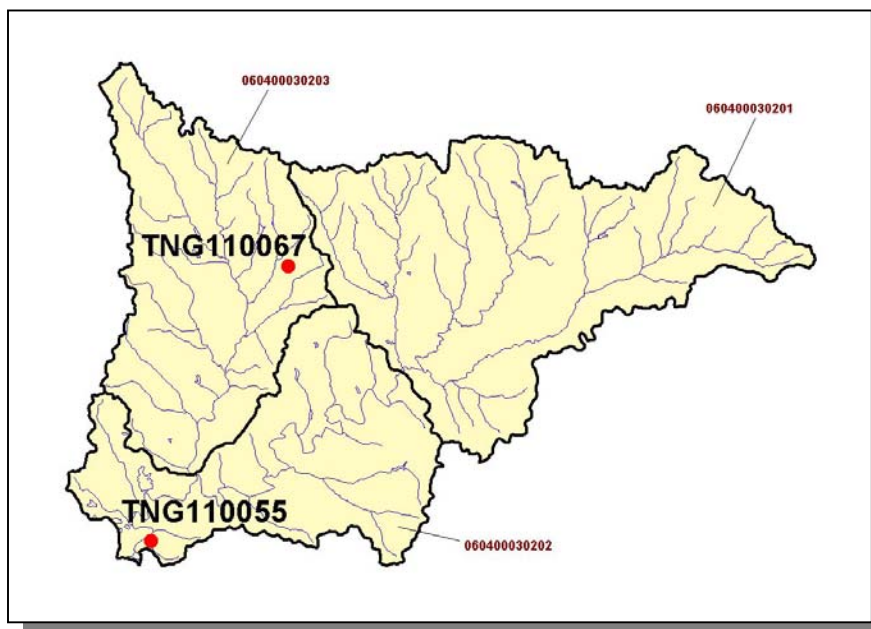


**Figure 4-22. Location of Active Mining Facilities in Subwatershed 0604000302.** Subwatershed 060400030201, 060400030202, and 060400030203 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.

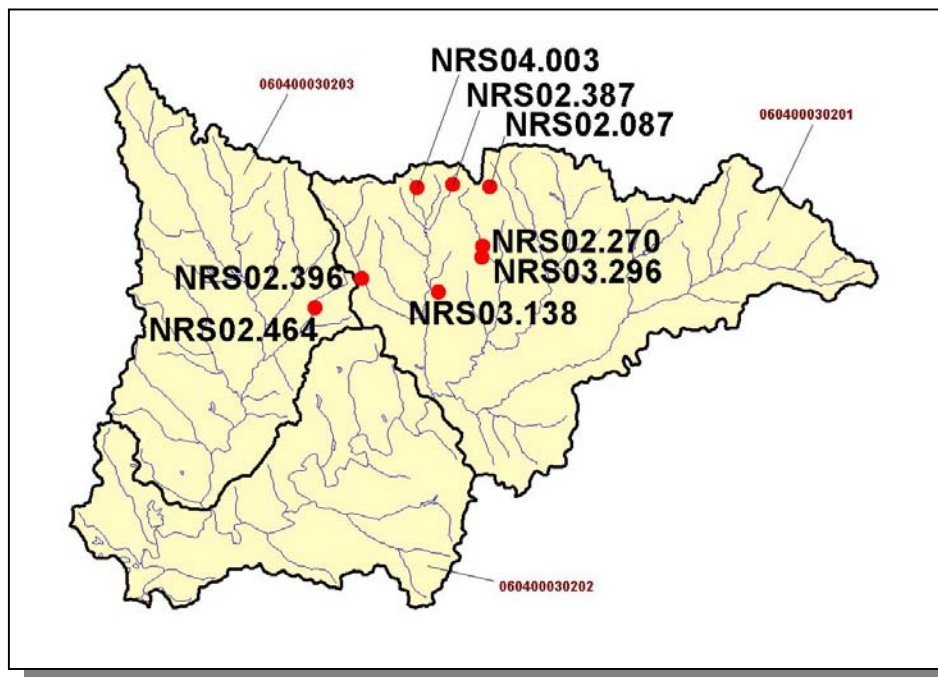




**Figure 4-23. Location of Water Treatment Plants in Subwatershed 0604000302.** Subwatershed 060400030201, 060400030202, and 060400030203 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



**Figure 4-24. Location of Ready Mix Concrete Plants in Subwatershed 0604000302.** Subwatershed 060400030201, 060400030202, and 060400030203 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



**Figure 4-25. Location of ARAP Sites (Individual Permits) in Subwatershed 0604000302.** Subwatershed 060400030201, 060400030202, and 060400030203 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



**Figure 4-26. Location of TMSP Facilities in Subwatershed 0604000302.** Subwatershed 060400030201, 060400030202, and 060400030203 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.

**4.2.B.iii.** Nonpoint Source Contributions.

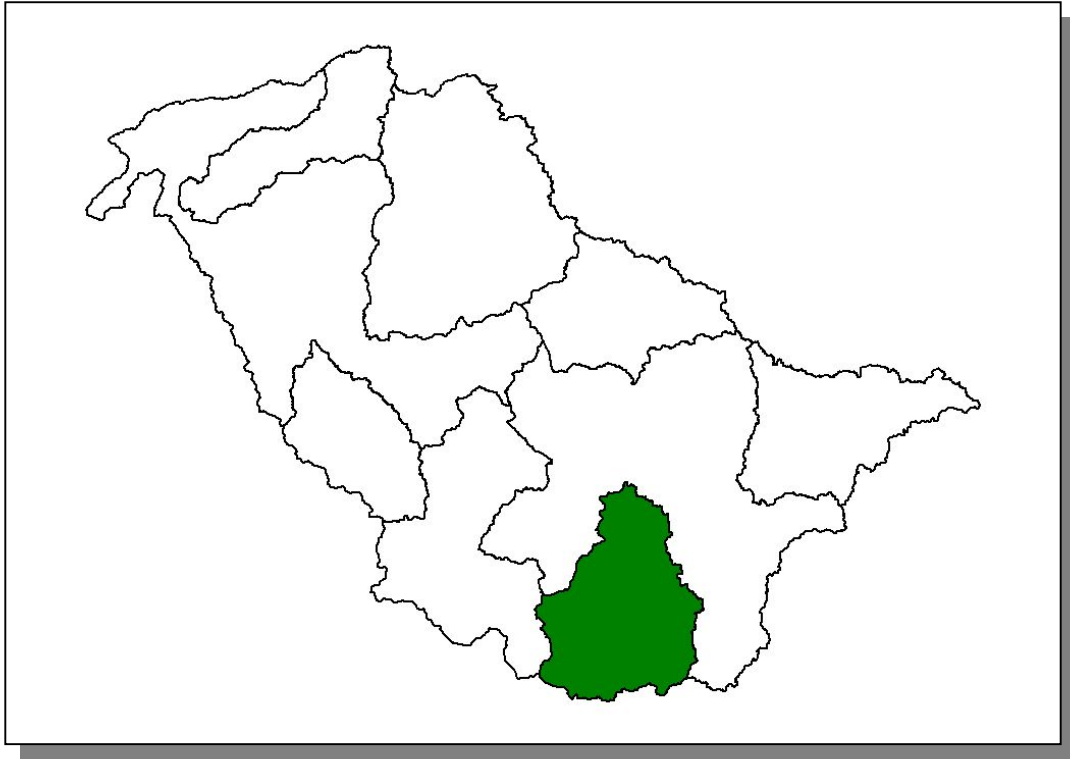
<b>LIVESTOCK (COUNTS)</b>						
Beef Cow	Cattle	Milk Cow	Chickens (layers)	Chickens Sold	Hogs	Sheep
7,672	15,541	726	18	<5	398	122

**Table 4-9. Summary of Livestock Count Estimates in Subwatershed 0604000302.** According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

<b>CROPS</b>	<b>TONS/ACRE/YEAR</b>
Legume (Pastureland)	0.33
Grass (Pastureland)	0.65
Grass (Hayland)	0.26
Legumes (Hayland)	0.98
Legumes, Grass (Hayland)	0.24
Grass, Forbs, Legumes (Mixed Pasture)	0.30
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	4.87
Soybeans (Row Crops)	6.84
Tobacco (Row Crops)	6.75
All Other Row Crops	11.45
Wheat (Close-Grown Cropland)	1.27
Other Cropland not Planted	4.98
Conservation Reserve Program Lands	0.37
Non-Agricultural Land Use	0.00
Other Land in Farms	0.12
Farmsteads and Ranch Headquarters	0.42

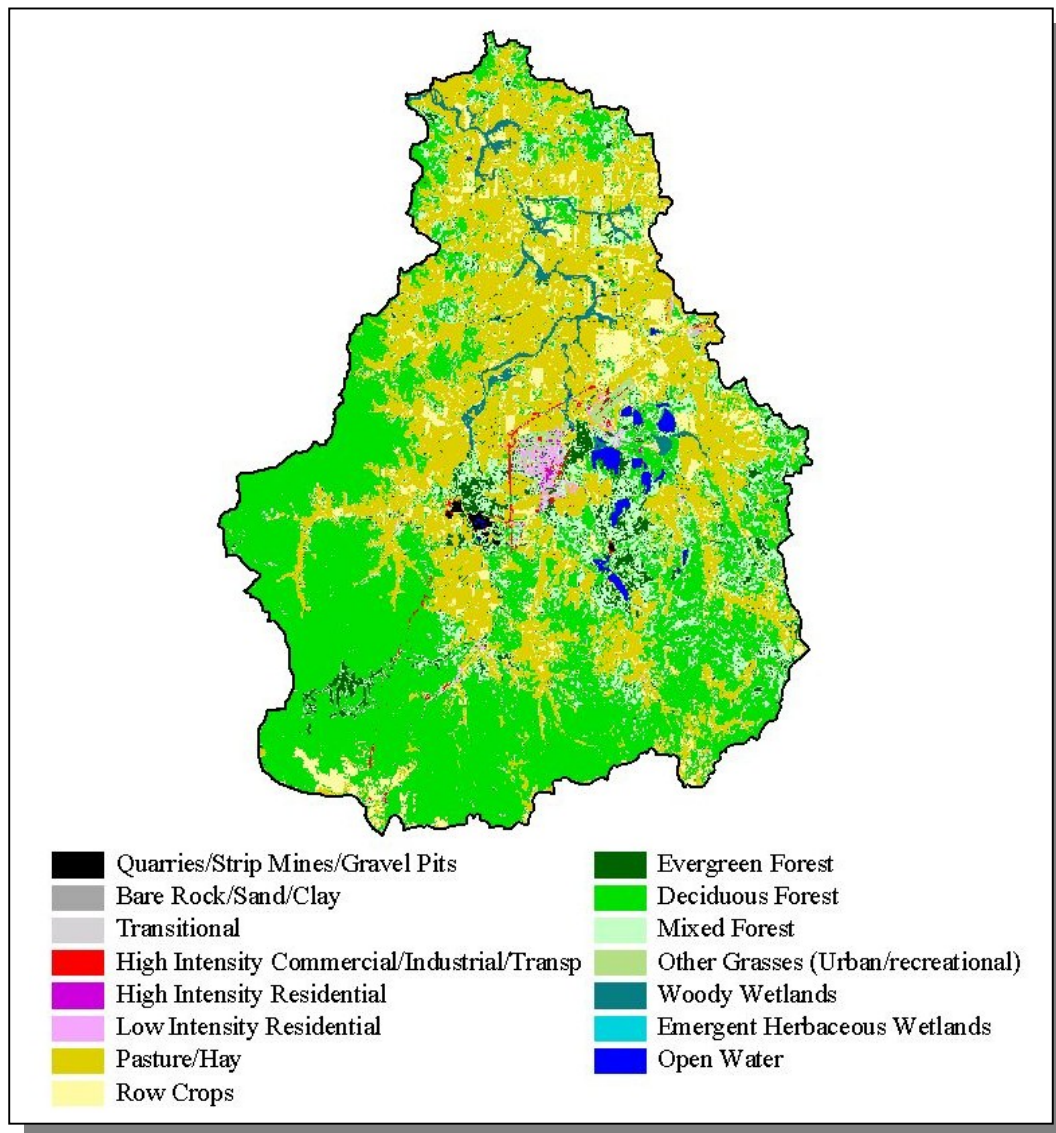
**Table 4-10. Annual Estimated Total Soil Loss in Subwatershed 0604000302.**

**4.2.C. 0604000303 (Big Bigby Creek).**

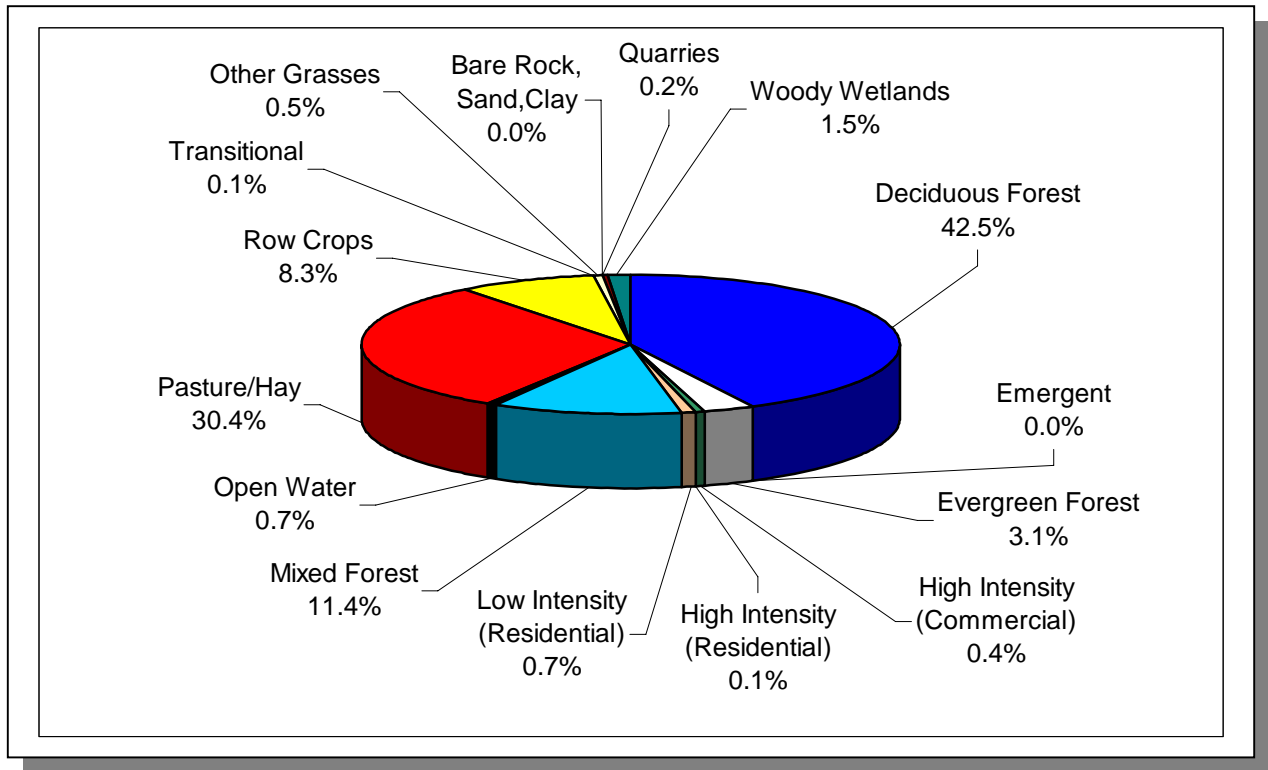


**Figure 4-27. Location of Subwatershed 0604000303.** All Lower Duck HUC-10 subwatershed boundaries are shown for reference.

4.2.C.i. General Description.

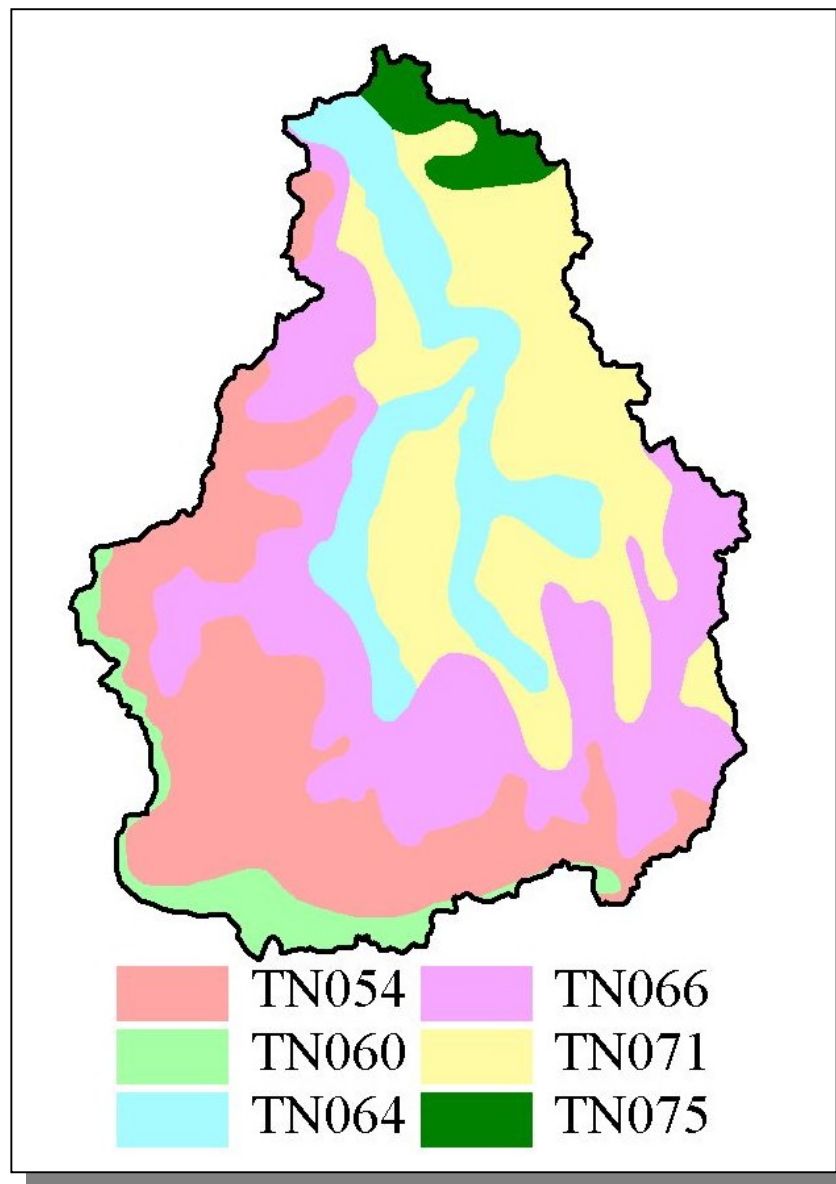


**Figure 4-28. Illustration of Land Use Distribution in Subwatershed 0604000303.**



**Figure 4-29. Land Use Distribution in Subwatershed 0604000303.** More information is provided in Appendix IV.





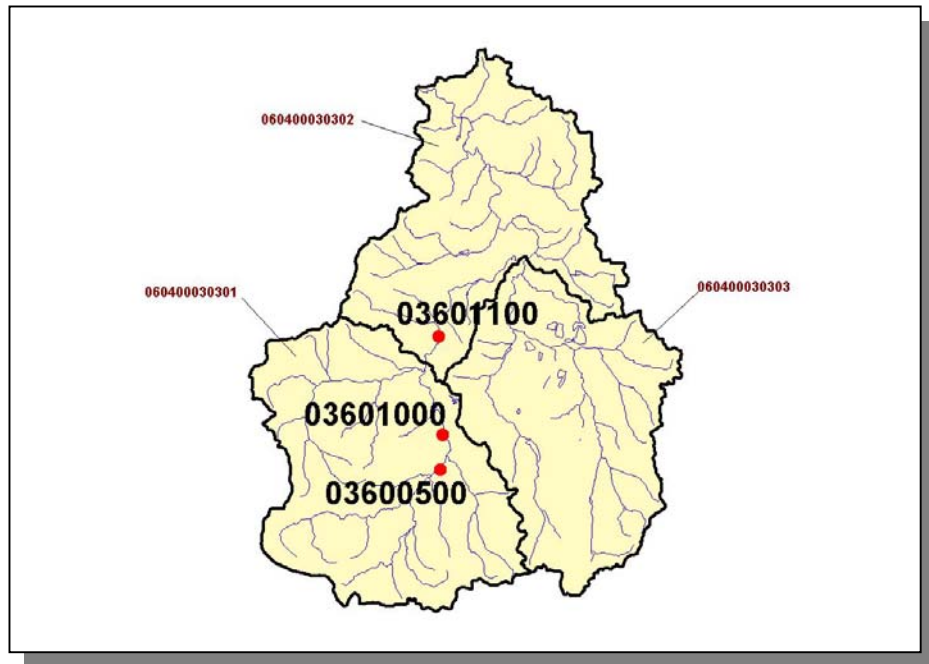
**Figure 4-30. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000303.**

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN054	0.00	C	3.04	4.84	Loam	0.32
TN060	5.00	B	1.30	5.32	Silty Loam	0.39
TN064	7.00	C	1.19	5.82	Silty Loam	0.37
TN066	0.00	B	2.62	4.75	Loam	0.28
TN071	0.00	C	2.37	5.70	Silty Loam	0.22
TN075	0.00	B	1.33	5.24	Loam	0.31

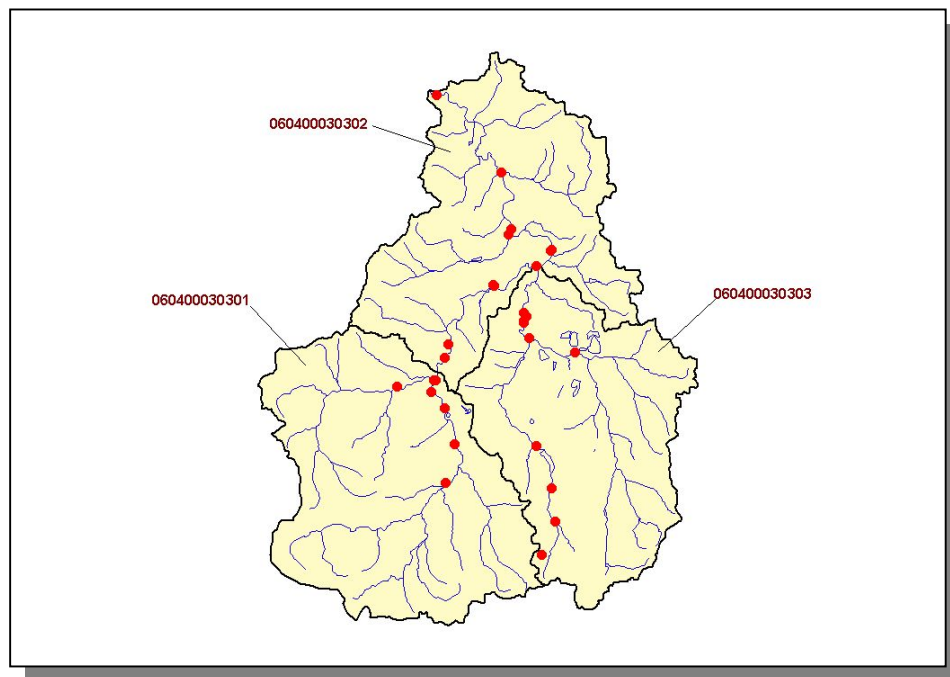
**Table 4-11. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000303.** More information is provided in Appendix IV.

County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-1997)
	1990	1997	2000		1990	1997	2000	
Giles	25,741	28,515	29,447	0.36	92	102	105	14.1
Lawrence	35,303	39,095	39,926	0.96	338	374	382	13.0
Lewis	9,247	10,789	11,367	5.81	537	626	660	22.9
Maury	54,812	68,268	69,498	17.1	9,375	11,677	11,887	26.8
<b>Totals</b>	<b>125,103</b>	<b>146,667</b>	<b>150,238</b>		<b>10,342</b>	<b>12,779</b>	<b>13,034</b>	<b>26.0</b>

*Table 4-12. Population Estimates in Subwatershed 0604000303.*

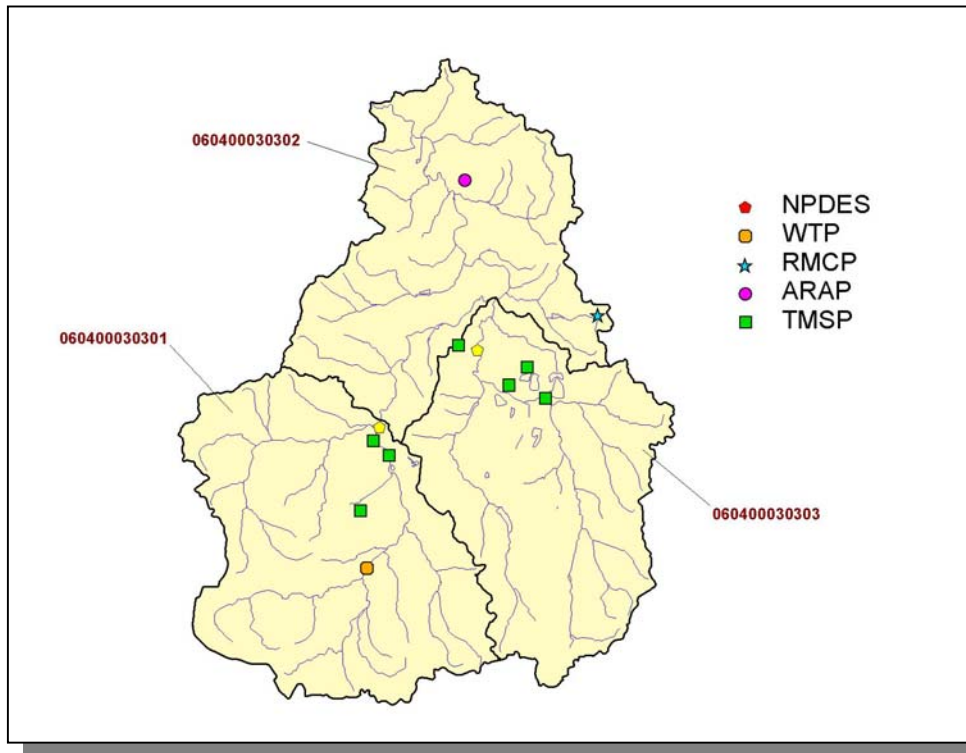


**Figure 4-31. Location of Historical Streamflow Data Collection Sites in Subwatershed 0604000303.** Subwatershed 060400030301, 060400030302, and 060400030303 boundaries are shown for reference. More information is provided in Appendix IV.

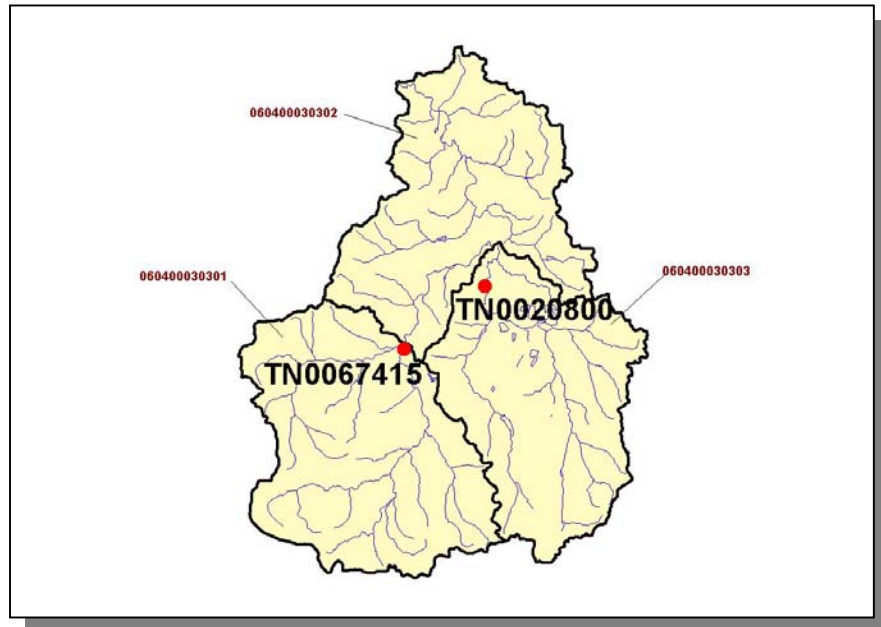


**Figure 4-32. Location of STORET Monitoring Sites in Subwatershed 0604000303.** Subwatershed 060400030301, 060400030302, and 060400030303 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.

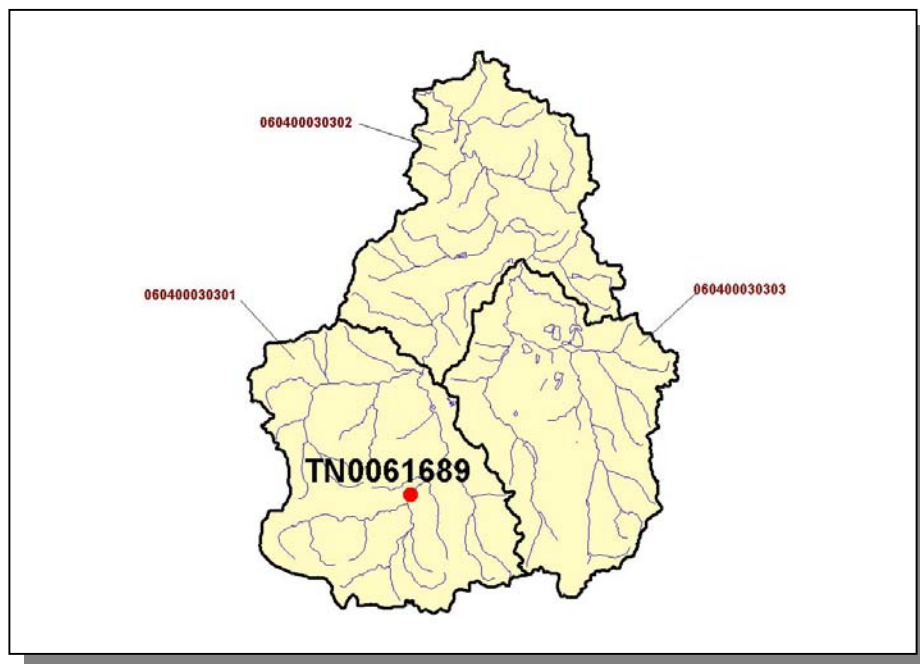
**4.2.C.ii.** Point Source Contributions.



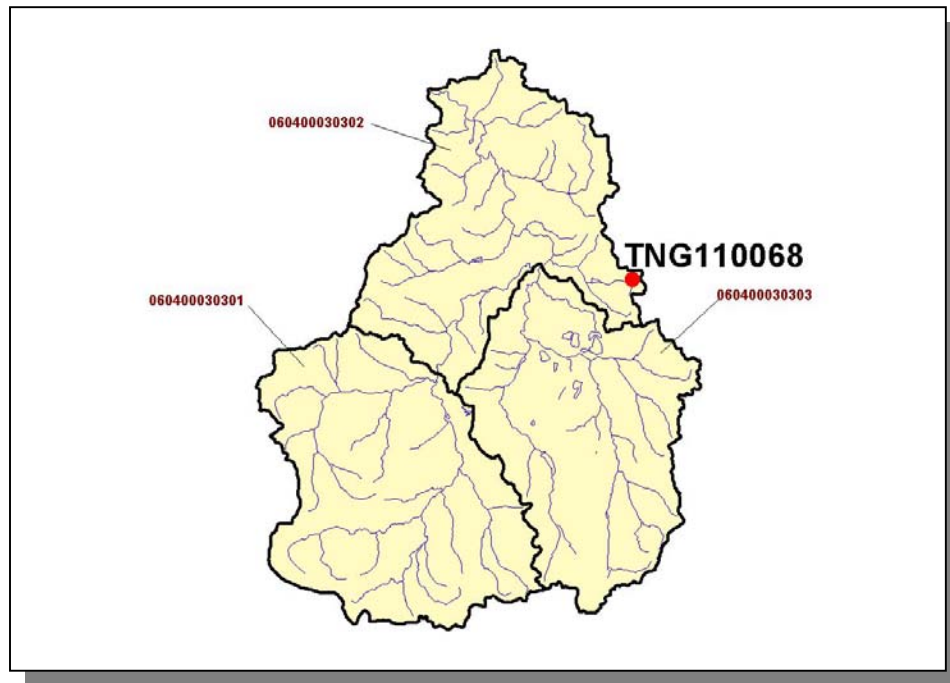
**Figure 4-33. Location of Active Point Source Facilities in Subwatershed 0604000303.** Subwatershed, 060400030301, 060400030302, and 060400030303 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



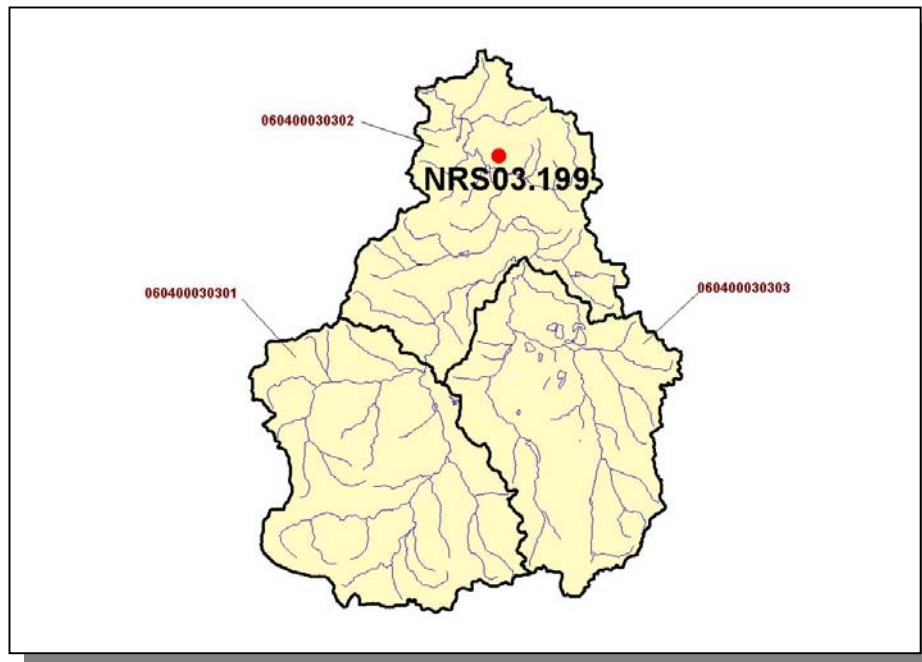
**Figure 4-34. Location of NPDES Facilities in Subwatershed 0604000303.** Subwatershed, 060400030301, 060400030302, and 060400030303 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



**Figure 4-35. Location of Water Treatment Plants in Subwatershed 0604000303.** Subwatershed, 060400030301, 060400030302, and 060400030303 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.

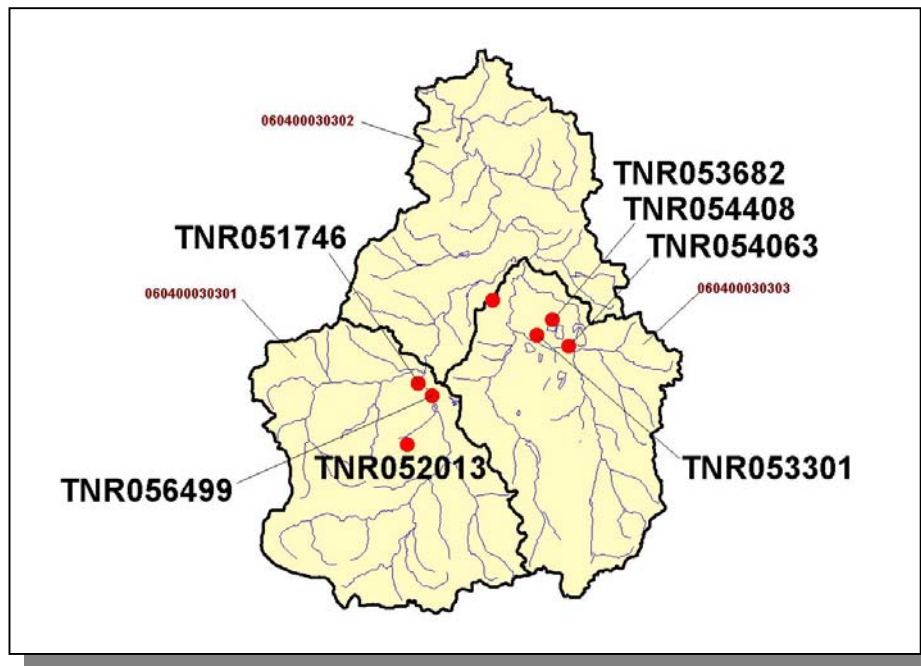


**Figure 4-36. Location of Ready Mix Concrete Plants in Subwatershed 0604000303.** Subwatershed, 060400030301, 060400030302, and 060400030303 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



**Figure 4-37. Location of ARAP Sites (Individual Permits) in Subwatershed 0604000303.** Subwatershed, 060400030301, 060400030302, and 060400030303 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



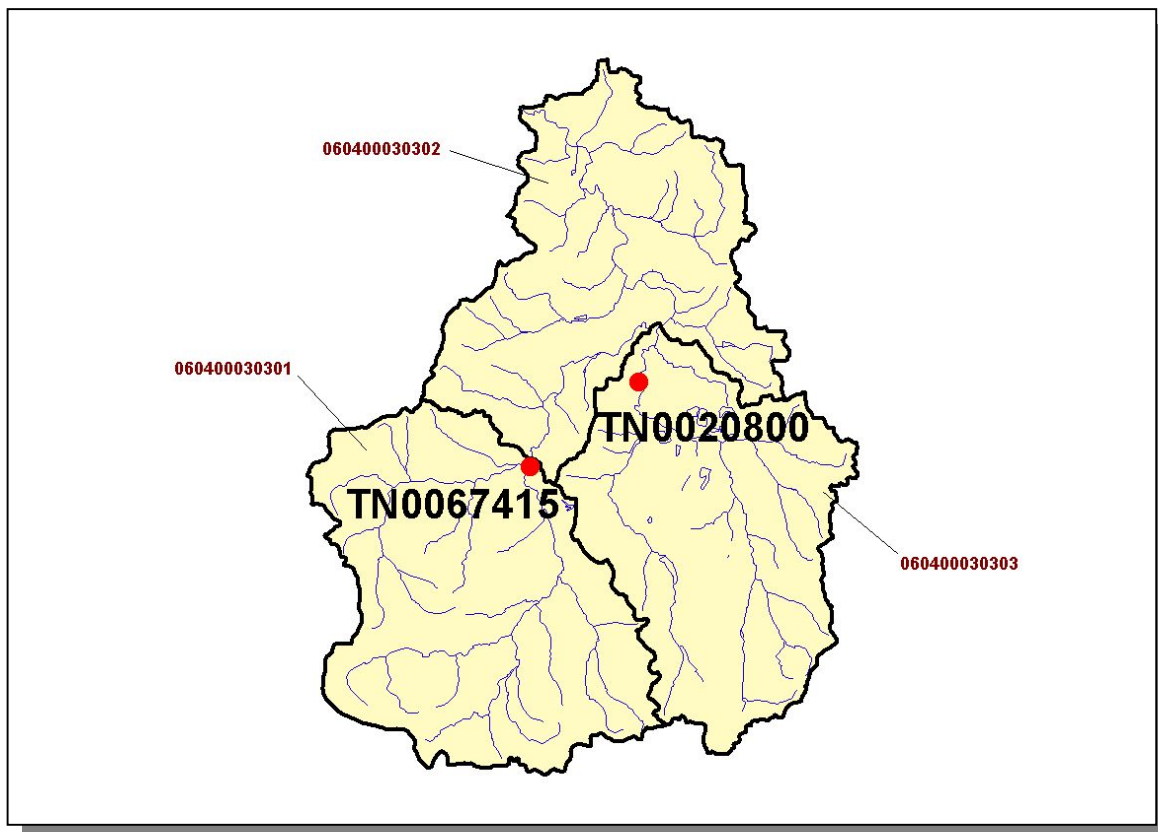


**Figure 4-38. Location of TMSF Facilities in Subwatershed 0604000303.** Subwatershed, 060400030301, 060400030302, and 060400030303 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.

**4.2.C.ii.a. Dischargers to Water Bodies Listed on the 2002 303(d) List**

There are two NPDES facilities discharging to water bodies listed on the 2002 303(d) list in Subwatershed 0604000303:

- TN0020800 (Mount Pleasant STP) discharges to Sugar Fork Creek @ RM 1.9
- TN0067415 (CYTEC Industries) discharges to Big Bigby Creek @ RM 15.1, 15.4, and 15.6



**Figure 4-39. Location of NPDES Dischargers to Water Bodies Listed on the 2002 303(d) List in Subwatershed 0604000303.** Subwatershed, 060400030301, 060400030302, and 060400030303 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.

PERMIT #	1Q10	3Q10	7Q10	3Q20	QDESIGN
TN0020800	0.34	0.36	0.40	0.28	0.71
TN0067415	3.9	4.1	4.3	3.2	

**Table 4-13. Receiving Stream Flow Information for NPDES Dischargers to Waterbodies Listed on the 2002 303(d) List in Subwatershed 0604000303.** Data are in million gallons per day (MGD). Data were obtained from the USGS publication *Flow Duration and Low Flows of Tennessee Streams Through 1992* or from permit files.

PERMIT #	WET	CBOD <sub>5</sub>	FECAL COLIFORM	E. COLI	NH <sub>3</sub>	TRC	TSS	SETTLEABLE SOLIDS	CN	DO	pH
TN0020800	X	X	X	X	X	X	X	X	X	X	X
TN0067415	X	X					X		X		X

**Table 4-14. Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2002 303(d) List in Subwatershed 0604000303.** WET, Whole Effluent Toxicity; CBOD<sub>5</sub>, Carbonaceous Biochemical Oxygen Demand (5-Day); TRC, Total Residual Chlorine; TSS, Total Suspended Solids.

PERMIT #	Pb	Cu	Ni	Zn	Cr
TN0020800	X	X	X		
TN0067415	X	X	X	X	X

**Table 4-15. Metals Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2002 303(d) List in Subwatershed 0604000303.**

PERMIT #	NITROBENZENE	PHENOL	TOLUENE	TRICHLOROETHYLENE
TN0067415	X	X	X	X

**Table 4-16. Organic Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2002 303(d) List in Subwatershed 0604000303.**

**4.2.C.iii.** Nonpoint Source Contributions.

<b>LIVESTOCK (COUNTS)</b>						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
6,334	12,977	609	17	<5	519	73

**Table 4-17. Summary of Livestock Count Estimates in Subwatershed 0604000303.**  
According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

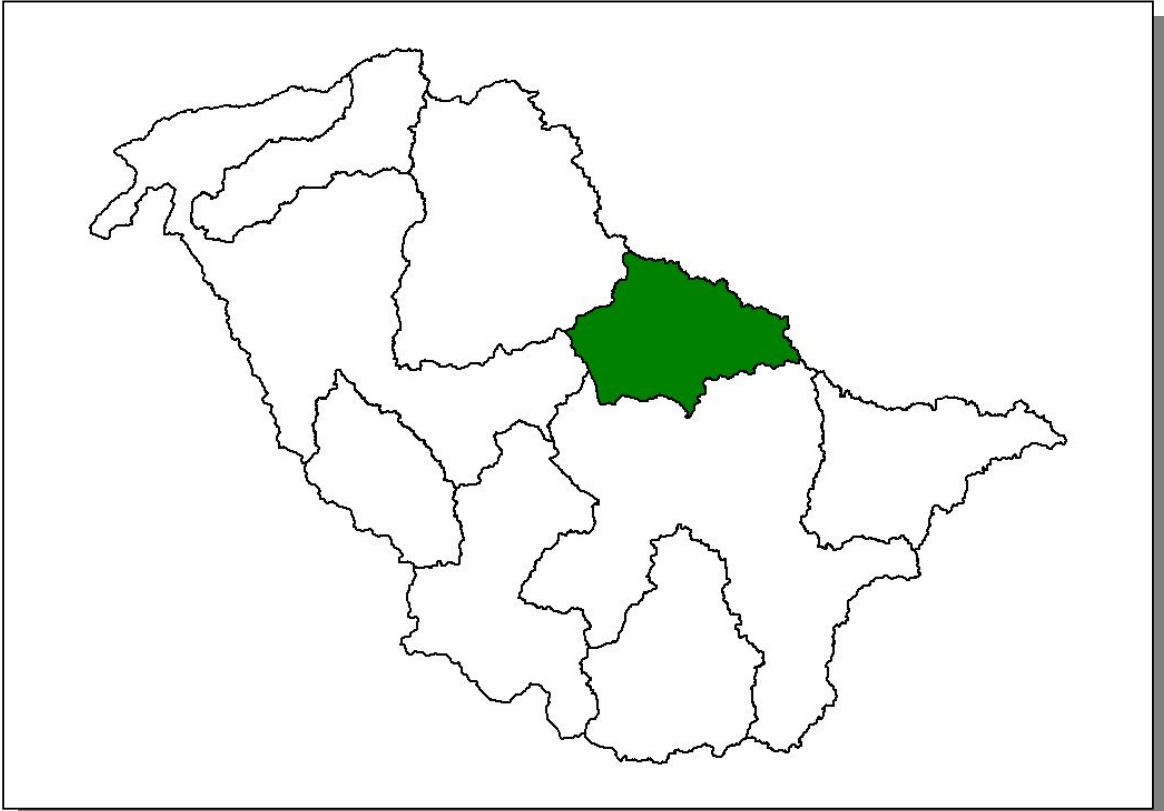
County	<b>INVENTORY</b>		<b>REMOVAL RATE</b>	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Giles	171.8	171.8	3.3	11.4
Lawrence	199.8	199.8	6.6	27.1
Lewis	158.0	158.0	4.0	10.2
<b>Totals</b>	<b>529.6</b>	<b>529.6</b>	<b>13.9</b>	<b>48.7</b>

**Table 4-18. Forest Acreage and Average Annual Removal Rates (1987-1994) in Subwatershed 0604000303.**

<b>CROPS</b>	<b>TONS/ACRE/YEAR</b>
Grass (Pastureland)	0.78
Grass (Hayland)	0.30
Legumes, Grass (Hayland)	0.30
Grass, Forbs, Legumes (Mixed Pasture)	0.27
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	4.71
Cotton (Row Crops)	8.07
Soybeans (Row Crops)	9.10
All Other Row Crops	11.27
Barley (Close-Grown Cropland)	1.08
Wheat (Close-Grown Cropland)	10.82
All Other Close-Grown Cropland	1.80
Summer Fallow (Other Cropland)	0.35
Other Cropland not Planted	4.32
Other Vegetable and Truck Crop	4.29
Conservation Reserve Program Lands	0.46
Non-Agricultural Land Use	0.00
Farmsteads and Ranch Headquarters	0.69

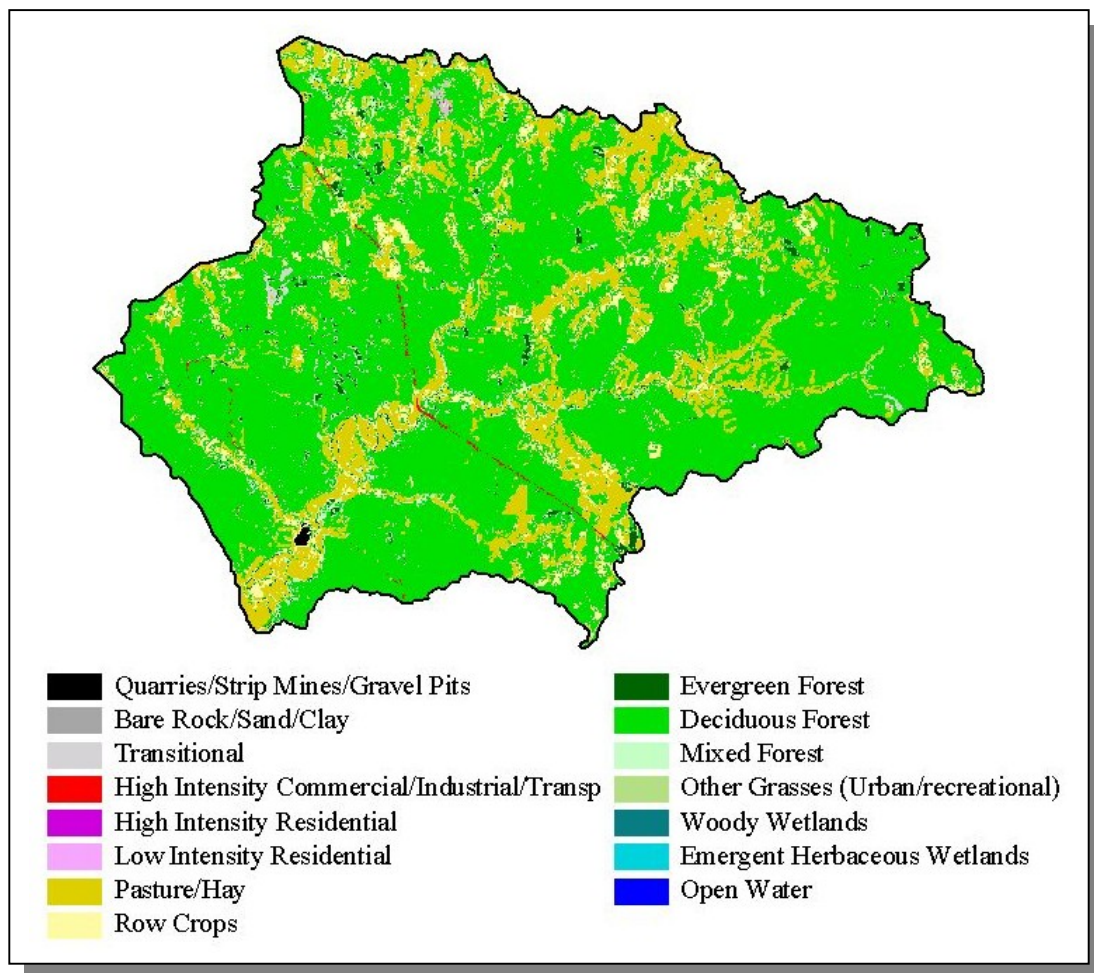
**Table 4-19. Annual Estimated Total Soil Loss in Subwatershed 0604000303.**

**4.2.D. 0604000304 (Lick Creek).**



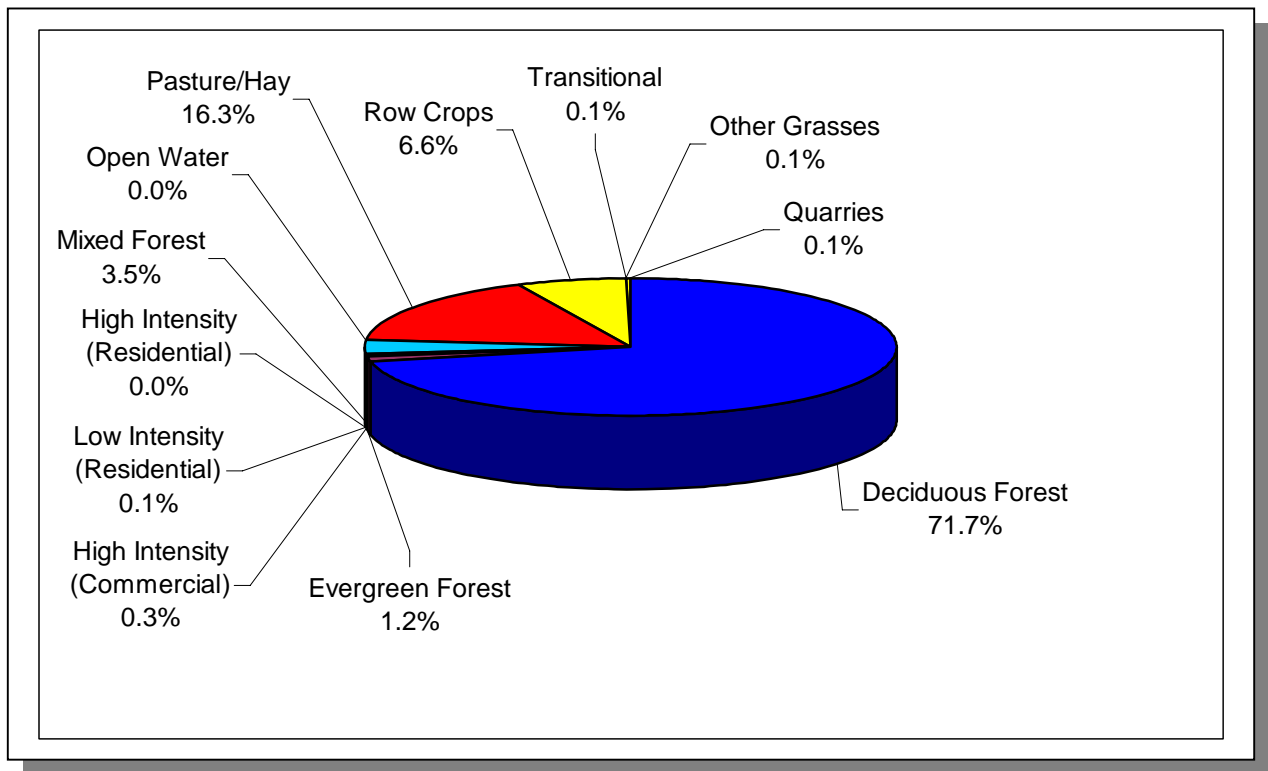
**Figure 4-40. Location of Subwatershed 0604000304.** All Lower Duck HUC-10 subwatershed boundaries are shown for reference.

4.2.D.i. General Description.

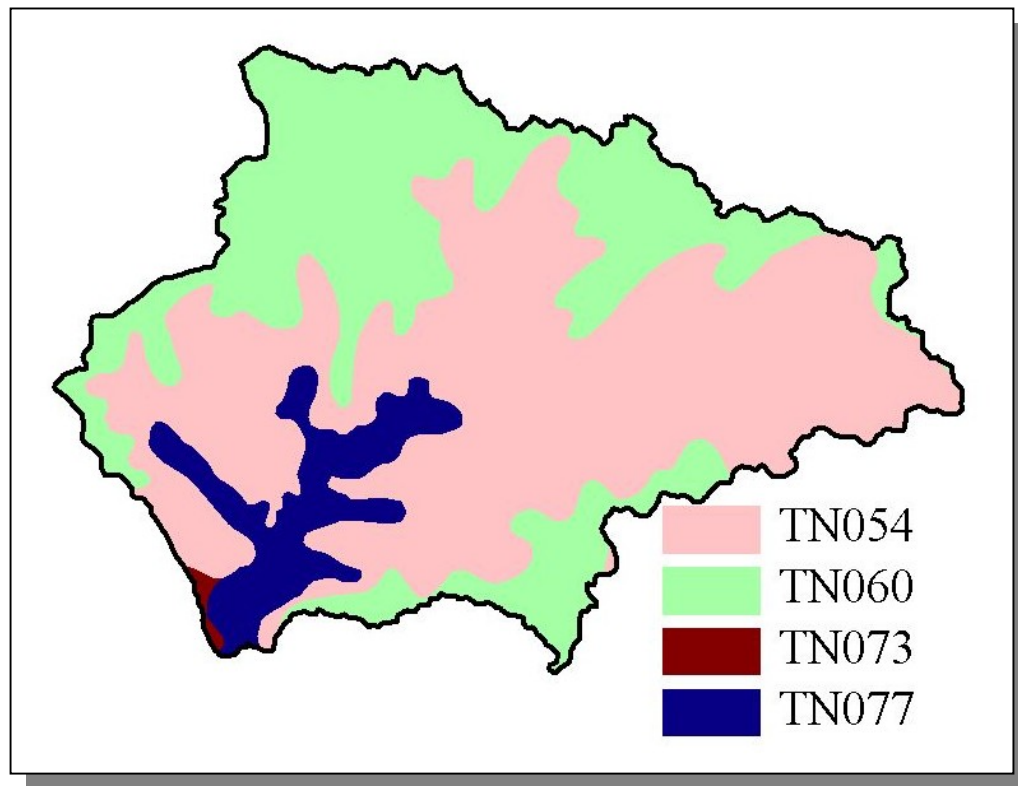


*Figure 4-41. Illustration of Land Use Distribution in Subwatershed 0604000304.*





**Figure 4-42. Land Use Distribution in Subwatershed 0604000304.** More information is provided in Appendix IV.



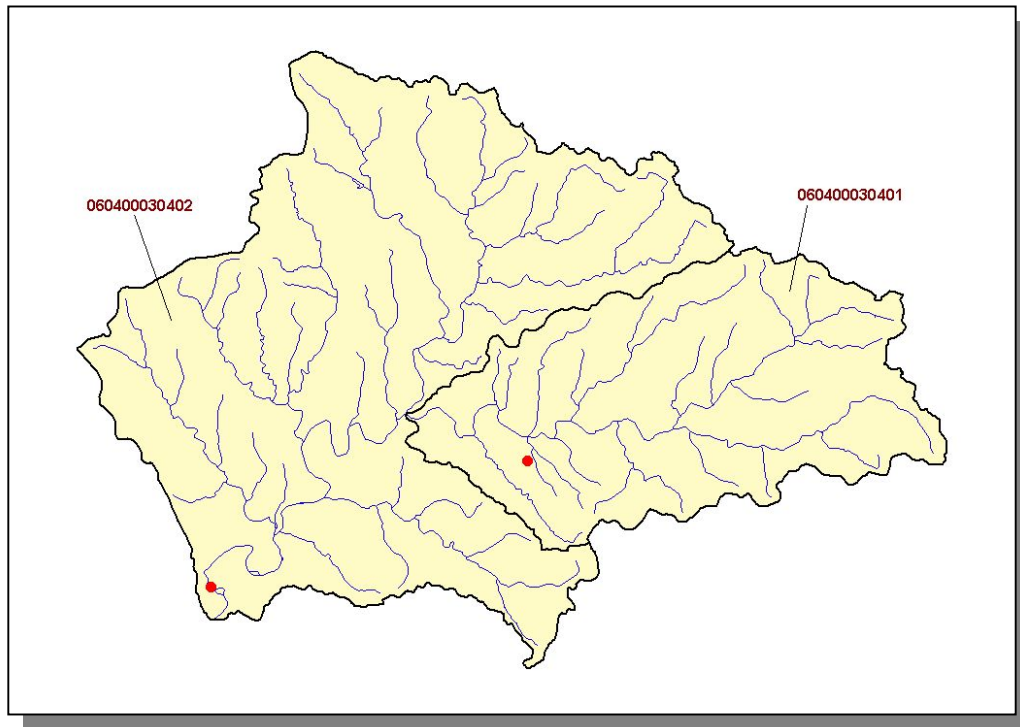
**Figure 4-43. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000304.**

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN054	0.00	C	3.04	4.84	Loam	0.32
TN060	5.00	B	1.30	5.32	Silty Loam	0.39
TN073	0.00	B	2.97	5.21	Loam	0.34
TN077	4.00	C	2.16	5.03	Loam	0.34

**Table 4-20. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000304.** More information is provided in Appendix IV.

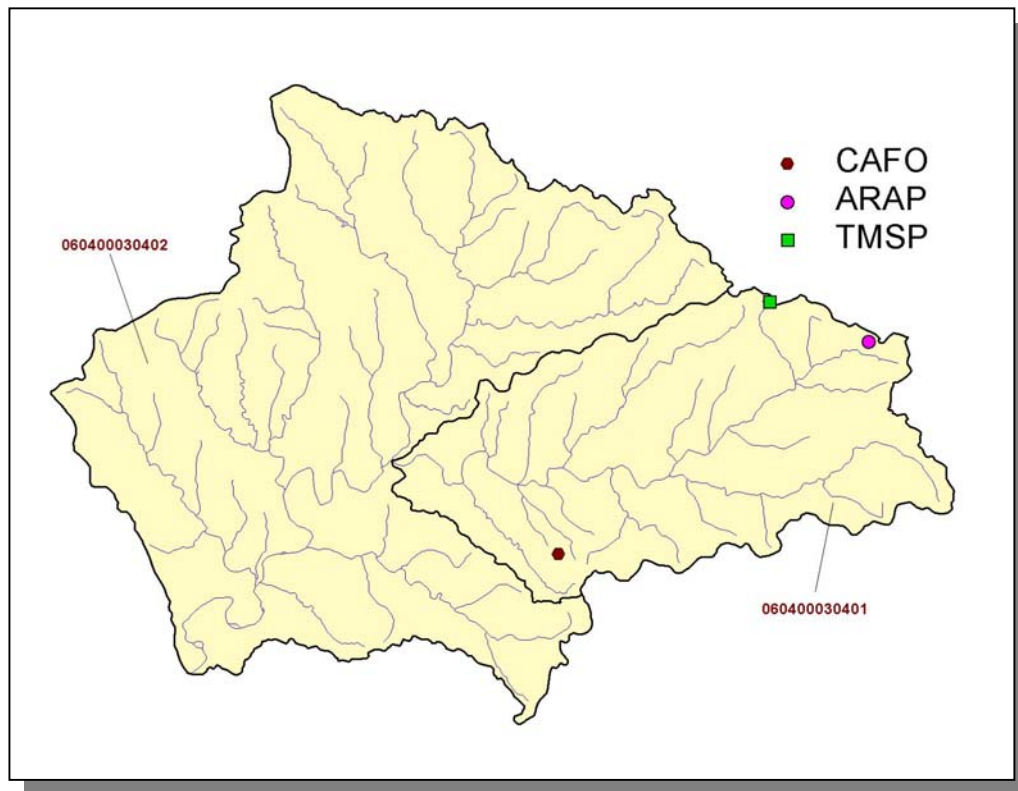
County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-1997)
	1990	1997	2000		1990	1997	2000	
Hickman	16,754	19,926	22,295	9.40	1,575	1,873	2,096	33.1
Maury	54,812	68,268	69,498	2.14	1,171	1,458	1,485	26.8
Williamson	81,021	111,453	126,638	5.08	4,117	5,663	6,435	56.3
<b>Totals</b>	<b>152,587</b>	<b>199,647</b>	<b>218,432</b>		<b>6,863</b>	<b>8,994</b>	<b>10,106</b>	<b>45.9</b>

*Table 4-21. Population Estimates in Subwatershed 0604000304.*

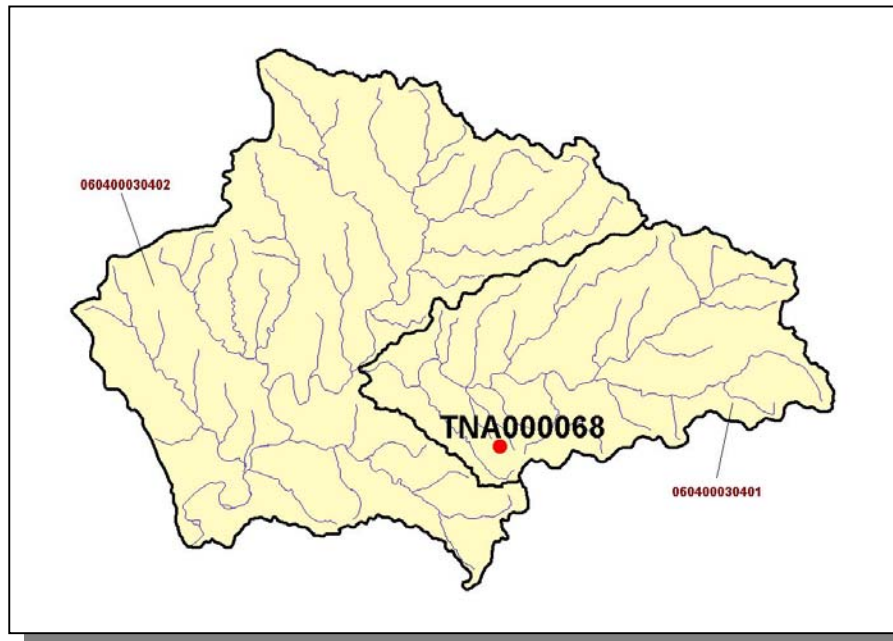


**Figure 4-44. Location of STORET Monitoring Sites in Subwatershed 0604000304.** Subwatershed 060400030401 and 060400030402 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.

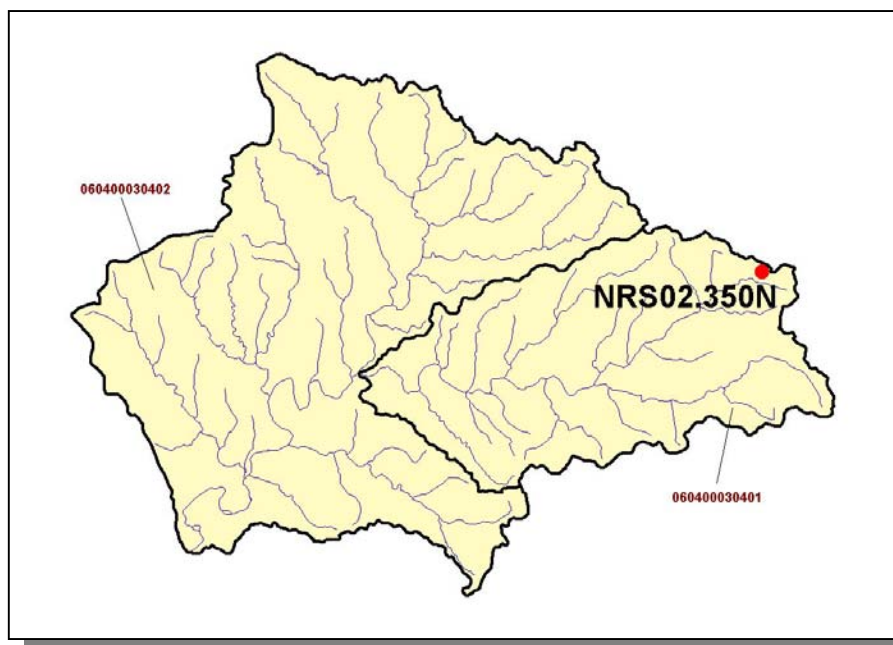
**4.2.D.ii.** Point Source Contributions.



**Figure 4-45. Location of Active Point Source Facilities in Subwatershed 0604000304.** Subwatershed 060400030401 and 060400030402 boundaries are shown for reference. More information is provided in Appendix IV.

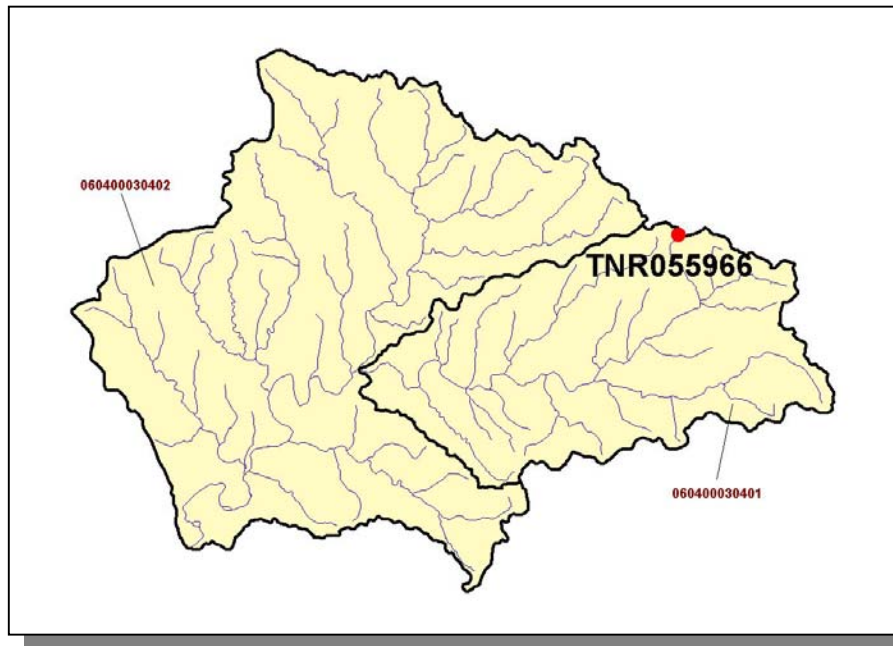


**Figure 4-46. Location of Concentrated Animal Feeding Operations (CAFO) in Subwatershed 0604000304.** Subwatershed 060400030401 and 060400030402 boundaries are shown for reference. More information is provided in Appendix IV.



**Figure 4-47. Location of ARAP Sites (Individual Permits) in Subwatershed 0604000304.** Subwatershed 060400030401 and 060400030402 boundaries are shown for reference. More information is provided in Appendix IV.





**Figure 4-48. Location of TMSF Facilities in Subwatershed 060400030402.** Subwatershed 060400030401 and 060400030402 boundaries are shown for reference. More information is provided in Appendix IV.

**4.2.D.iii.** Nonpoint Source Contributions.

<b>LIVESTOCK (COUNTS)</b>						
Beef Cow	Milk Cow	Cattle	Chickens (Layers)	Chickens Sold	Hogs	Sheep
2,780	112	5,317	8	<5	601	34

**Table 4-22. Summary of Livestock Count Estimates in Subwatershed 0604000304.** According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

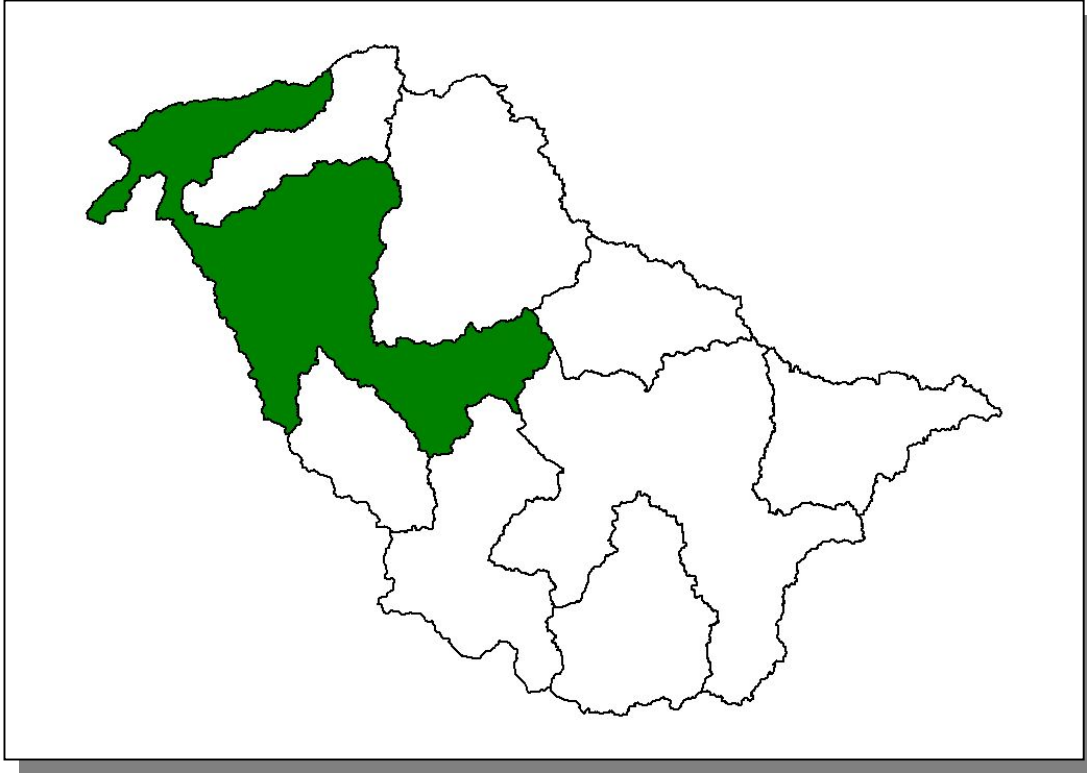
County	<b>INVENTORY</b>		<b>REMOVAL RATE</b>	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Hickman	297.2	297.2	5.8	23.0

**Table 4-23. Forest Acreage and Average Annual Removal Rates (1987-1994) in Subwatershed 0604000304.**

<b>CROPS</b>	<b>TONS/ACRE/YEAR</b>
Legume (Pastureland)	0.56
Grass (Pastureland)	0.96
Grass (Hayland)	0.14
Legumes (Hayland)	1.03
Legumes, Grass (Hayland)	0.25
Grass, Forbs, Legumes (Mixed Pasture)	0.65
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	5.18
Soybeans (Row Crops)	5.12
Tobacco (Row Crops)	7.37
All Other Row Crops	11.45
Wheat (Close-Grown Cropland)	1.27
Other Cropland not Planted	5.84
Conservation Reserve Program Lands	0.52
Non-Agricultural Land Use	0.00
Other Land in Farms	0.12
Farmsteads and Ranch Headquarters	0.22

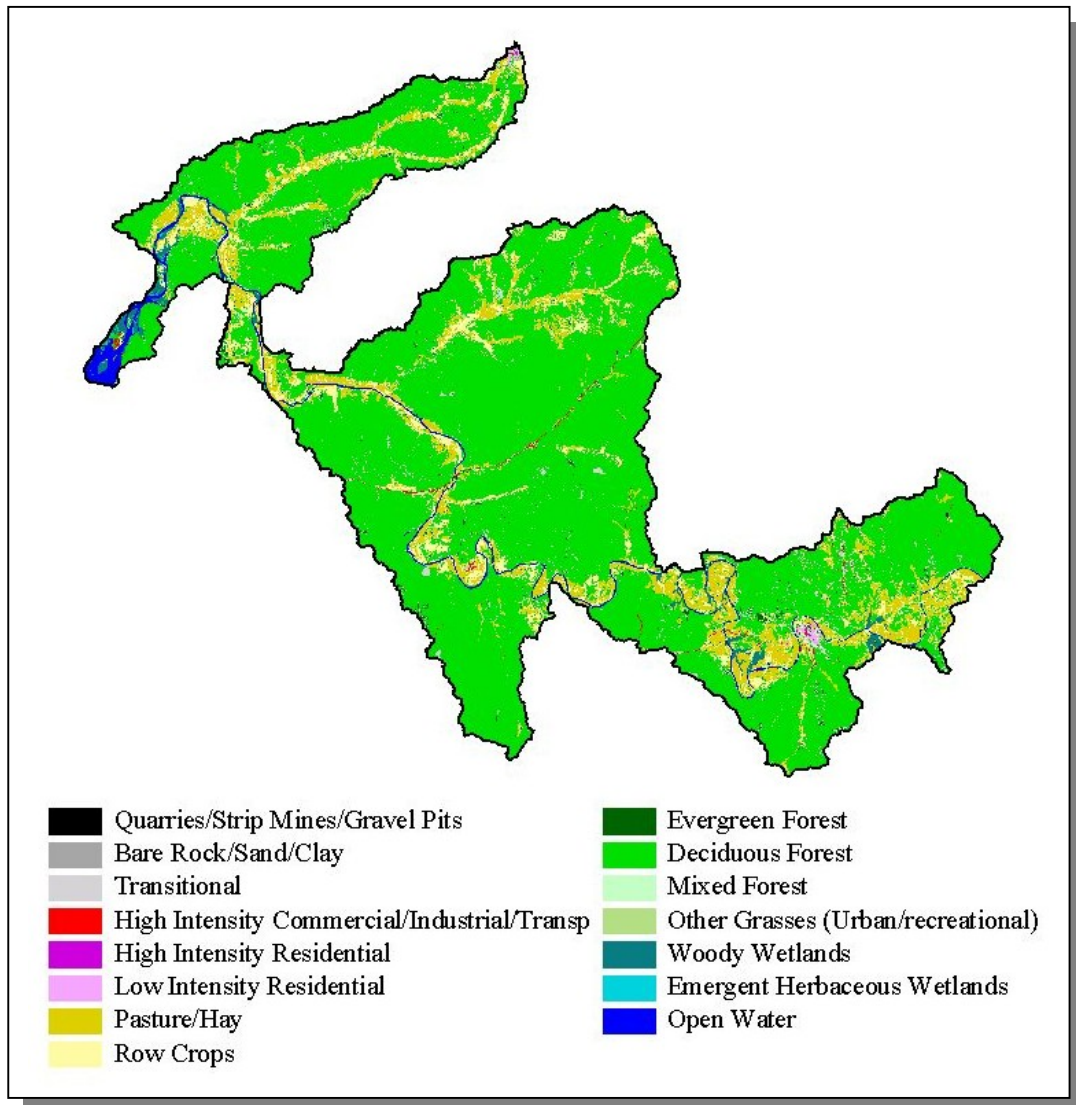
**Table 4-24. Annual Soil Loss in Subwatershed 0604000304.**

**4.2.E. 0604000305 (Duck River).**

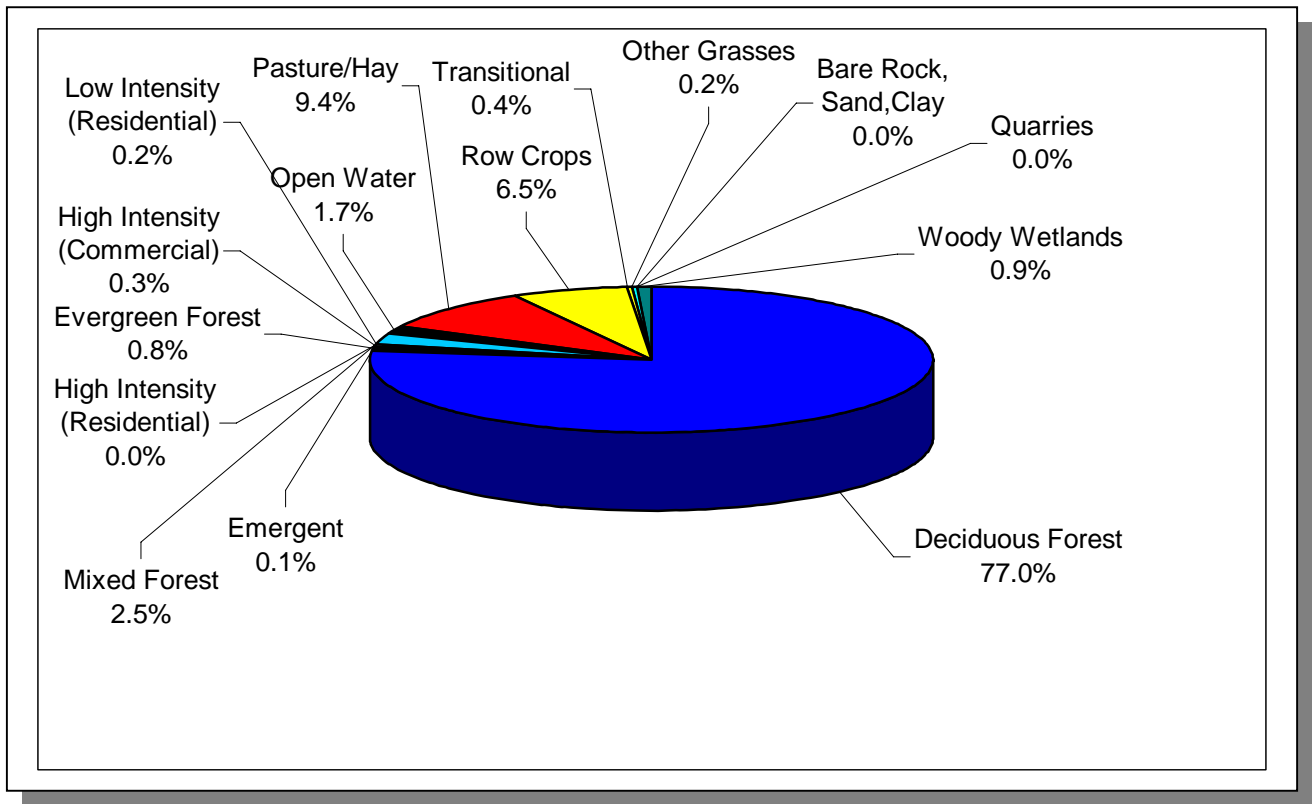


**Figure 4-49. Location of Subwatershed 0604000305.** All Lower Duck HUC-10 subwatershed boundaries are shown for reference.

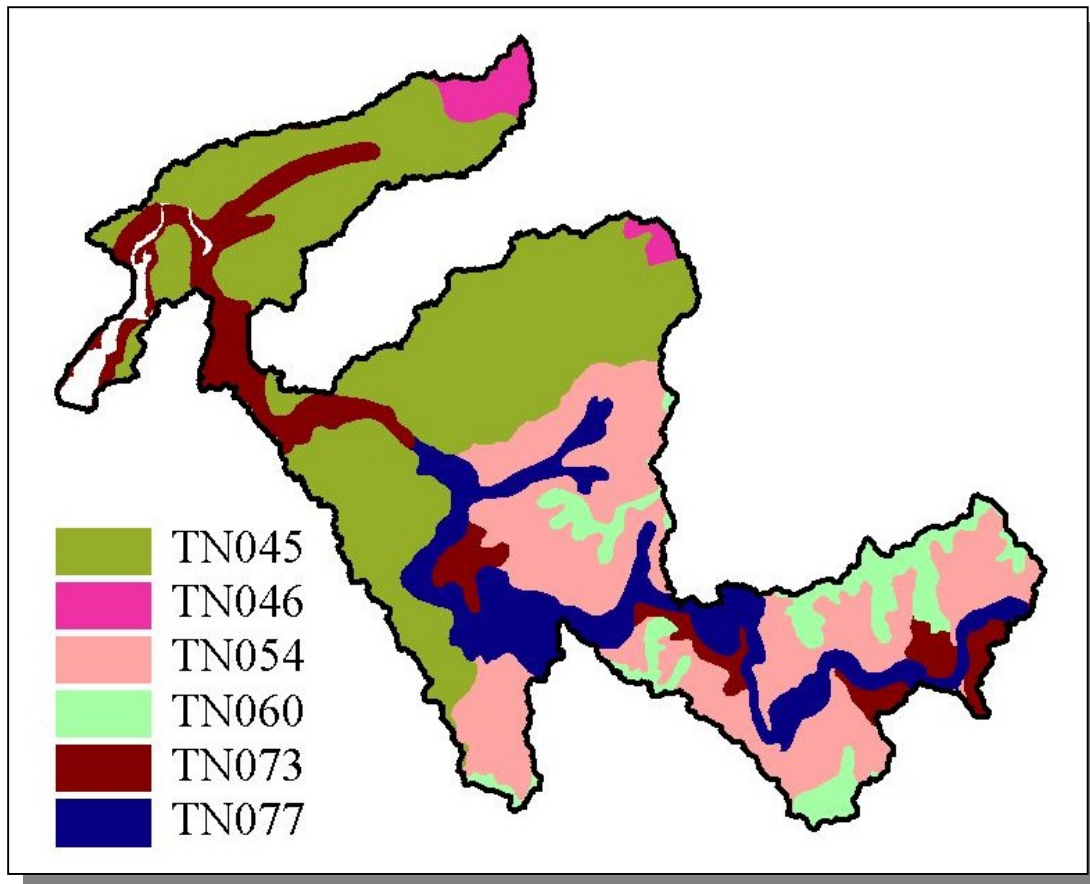
4.2.E.i. General Description.



*Figure 4-50. Illustration of Land Use Distribution in Subwatershed 0604000305.*



**Figure 4-51. Land Use Distribution in Subwatershed 0604000305.** More information is provided in Appendix IV.



**Figure 4-52. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000305.**

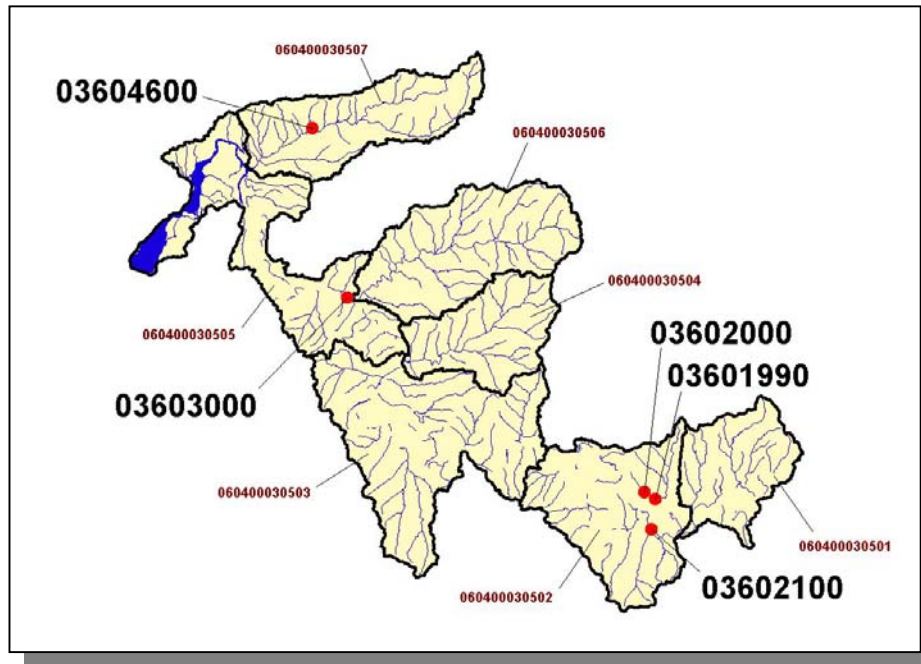
STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hr)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN045	0.00	B	1.95	5.45	Loam	0.35
TN046	0.00	B	1.98	5.09	Silty Loam	0.38
TN054	0.00	C	3.04	4.84	Loam	0.32
TN060	5.00	B	1.30	5.32	Silty Loam	0.39
TN073	0.00	B	2.97	5.21	Loam	0.34
TN077	4.00	C	2.16	5.03	Loam	0.34

**Table 4-25. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000305.** More information is provided in Appendix IV.

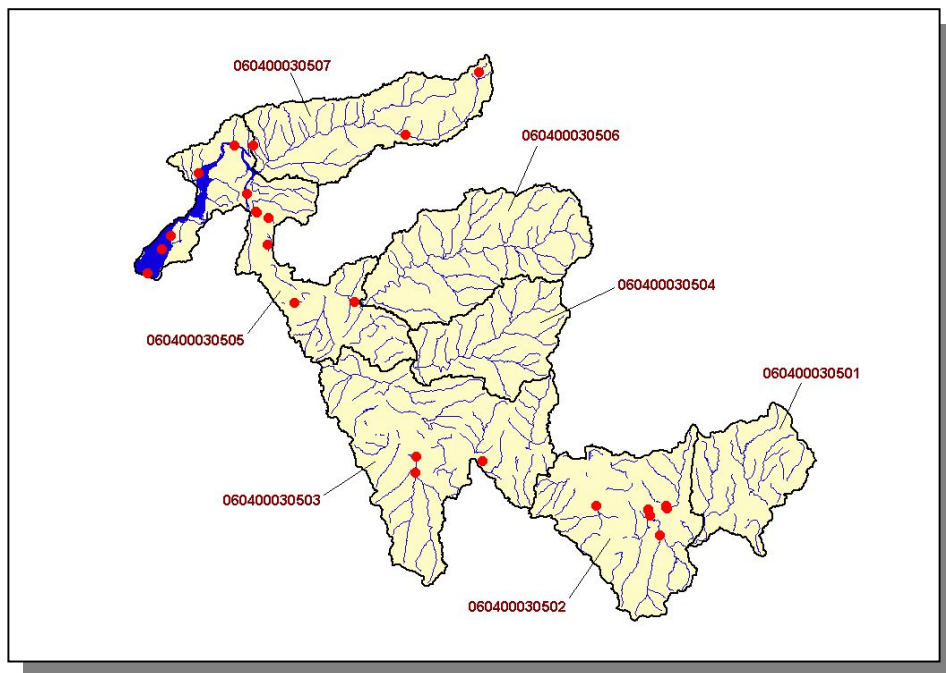


County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-1997)
	1990	1997	2000		1990	1997	2000	
Hickman	16,754	19,926	22,295	28.19	4,722	5,617	6,284	33.1
Humphreys	15,795	16,839	17,929	27.49	4,341	4,628	4,928	13.5
Perry	6,612	7,438	7,631	0.89	59	67	68	15.3
<b>Totals</b>	<b>39,161</b>	<b>44,203</b>	<b>47,855</b>		<b>9,122</b>	<b>10,312</b>	<b>11,280</b>	<b>23.7</b>

*Table 4-26. Population Estimates in Subwatershed 0604000305.*

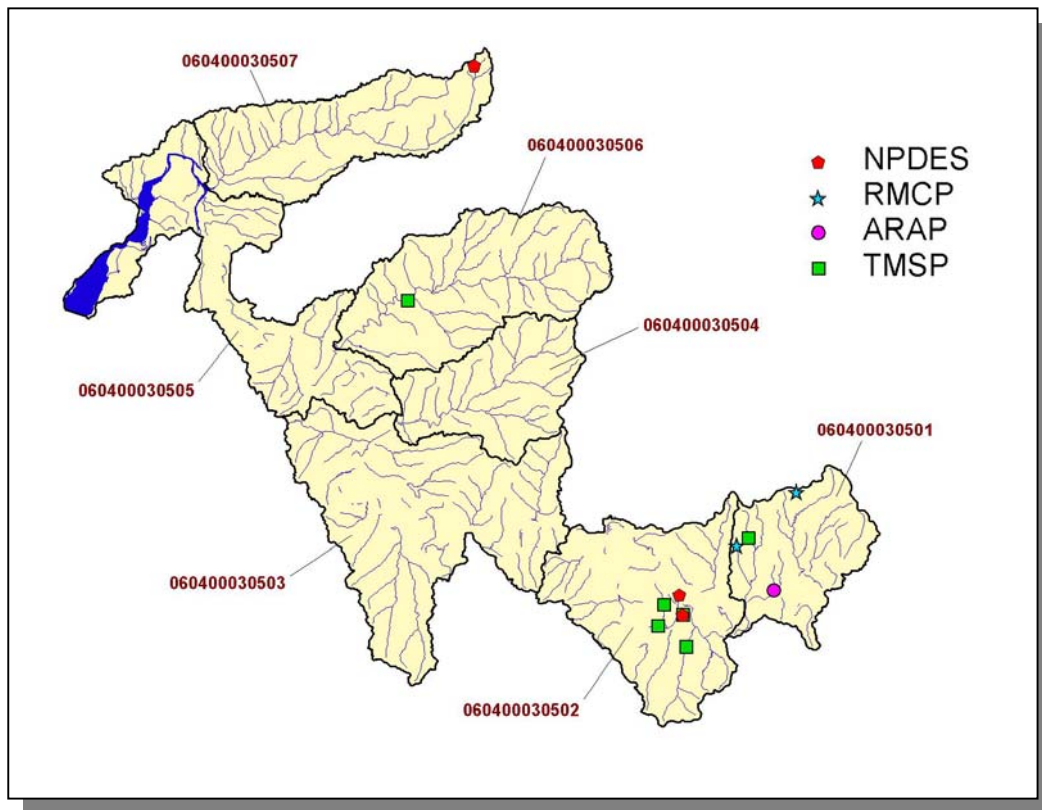


**Figure 4-53. Location of Historical Streamflow Data Collection Sites in Subwatershed 0604000305.** Subwatershed 060400030501, 060400030502, 060400030503, 060400030504, 060400030505, 060400030506 and 060400030507 boundaries are shown for reference. More information is provided in Appendix IV.

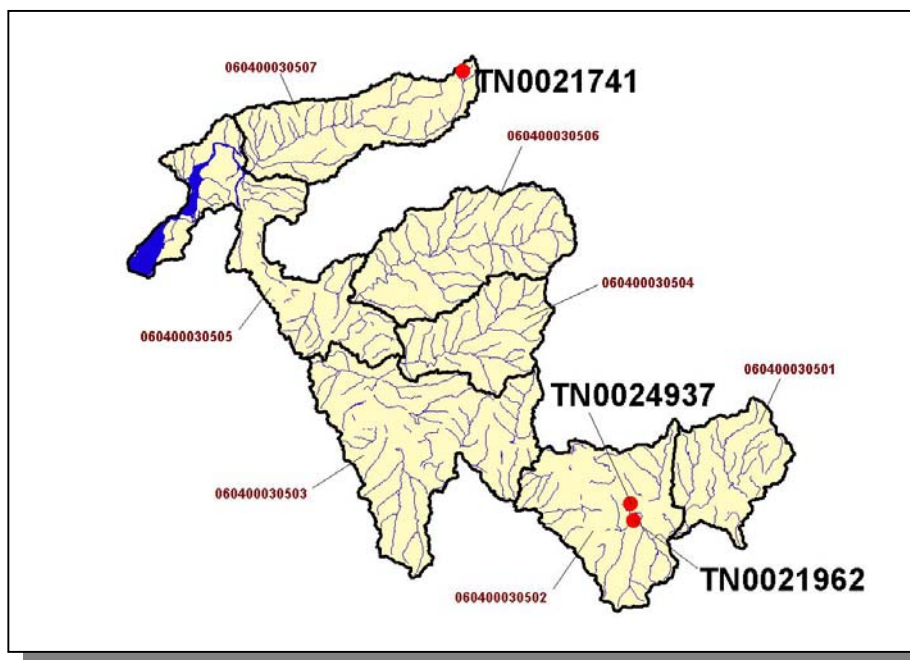


**Figure 4-54. Location of STORET Monitoring Sites in Subwatershed 0604000305.** Subwatershed 060400030501, 060400030502, 060400030503, 060400030504, 060400030505, 060400030506 and 060400030507 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.

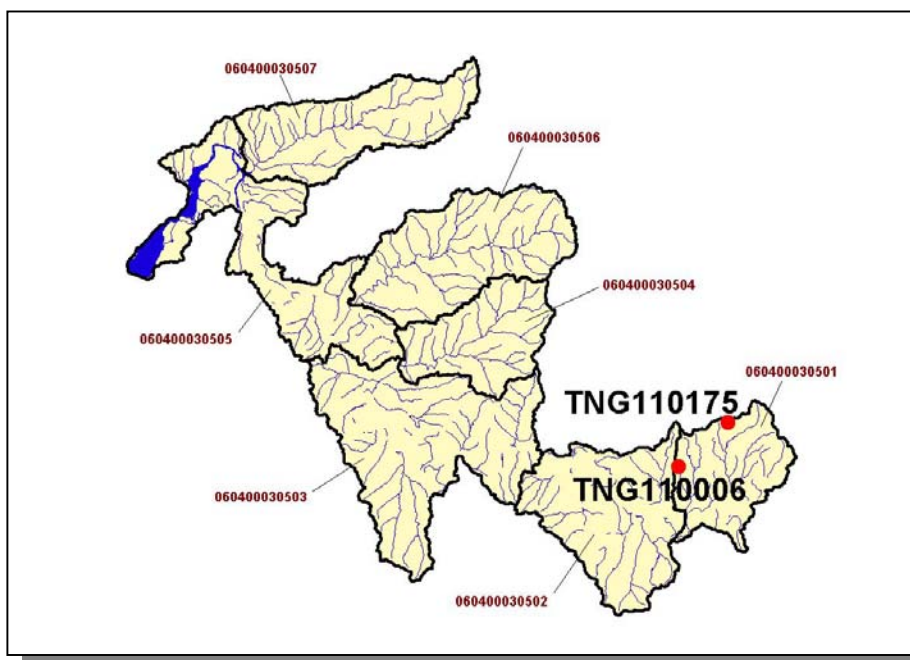
4.2.E.ii. Point Source Contributions.



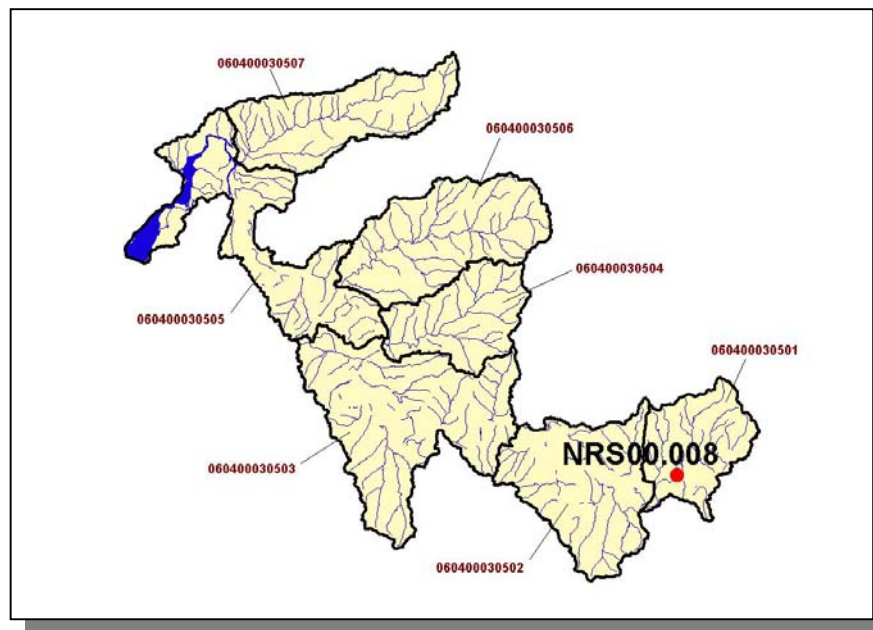
**Figure 4-55. Location of NPDES Facilities in Subwatershed 0604000305.** Subwatershed 060400030501, 060400030502, 060400030503, 060400030504, 060400030505, 060400030506, and 060400030507 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



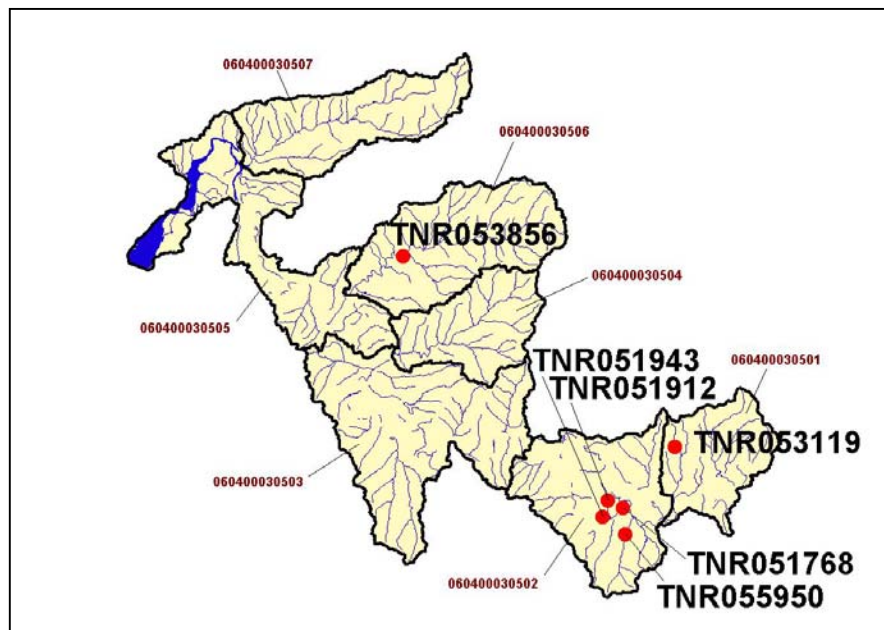
**Figure 4-56. Location of NPDES Facilities in Subwatershed 0604000305.** Subwatershed 060400030501, 060400030502, 060400030503, 060400030504, 060400030505, 060400030506, and 060400030507 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



**Figure 4-57. Location of Ready Mix Concrete Plants in Subwatershed 0604000305.** Subwatershed 060400030501, 060400030502, 060400030503, 060400030504, 060400030505, 060400030506, and 060400030507 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



**Figure 4-58. Location of ARAP Sites (Individual Permits) in Subwatershed 0604000305.** Subwatershed 060400030501, 060400030502, 060400030503, 060400030504, 060400030505, 060400030506, and 060400030507 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



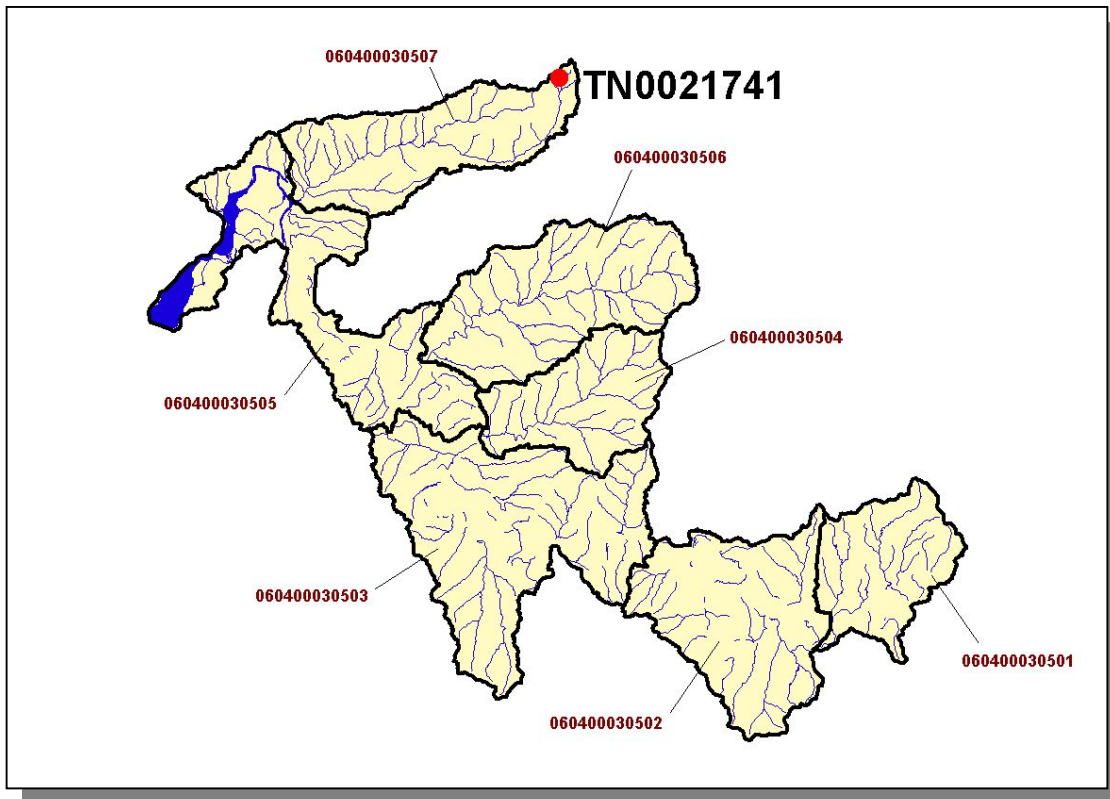
**Figure 4-59. Location of TMSP Facilities in Subwatershed 0604000305.** Subwatershed 060400030501, 060400030502, 060400030503, 060400030504, 060400030505, 060400030506, and 060400030507 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



**4.2.E.ii.a. Dischargers to Water Bodies Listed on the 2002 303(d) List**

There is one NPDES facility discharging to water bodies listed on the 2002 303(d) list in Subwatershed 0604000305:

- TN0021741 (McEwen STP) discharges to Blue Creek @ RM 16.2



**Figure 4-60. Location of NPDES Dischargers to Water Bodies Listed on the 2002 303(d) List in Subwatershed 0604000305.** Subwatershed 060400030501, 060400030502, 060400030503, 060400030504, 060400030505, 060400030506, and 060400030507 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



PERMIT #	1Q10	3Q10	7Q10	3Q20	QDESIGN
TN0021741	8.2	8.3	8.4	7.5	0.45

**Table 4-27. Receiving Stream Flow Information for NPDES Dischargers to Waterbodies Listed on the 2002 303(d) List in Subwatershed 0604000305.** Data are in million gallons per day (MGD). Data were obtained from the USGS publication Flow Duration and Low Flows of Tennessee Streams Through 1992 or from permit files.

PERMIT #	NO <sub>2</sub> + NO <sub>3</sub>	TOTAL P	TOTAL ORGANIC N
TN0021741	X	X	X

**Table 4-28. Monitoring Requirements for NPDES Dischargers to Waterbodies Listed on the 2002 303(d) List in Subwatershed 0604000305.**

PERMIT #	WET	CBOD <sub>5</sub>	NH <sub>3</sub>	Pb	Cu	Se	TSS	DO	pH
TN0021741	X	X	X	X	X	X	X	X	X

**Table 4-29. Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2002 303(d) List in Subwatershed 0604000305.** WET, Whole Effluent Toxicity; CBOD<sub>5</sub>, Carbonaceous Biochemical Oxygen Demand (5-Day); TSS, Total Suspended Solids.

PERMIT #	2,4,6-TRICHLOROPHENOL
TN0021741	X

**Table 4-30. Organic Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2002 303(d) List in Subwatershed 0604000305.**

**4.2.E.iii. Nonpoint Source Contributions.**

<b>LIVESTOCK (COUNTS)</b>						
Beef Cow	Milk Cow	Cattle	Chickens (Layers)	Chickens Sold	Hogs	Sheep
6,077	115	11,904	21	<5	1,355	14

**Table 4-31. Summary of Livestock Count Estimates in Subwatershed 0604000305.** According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

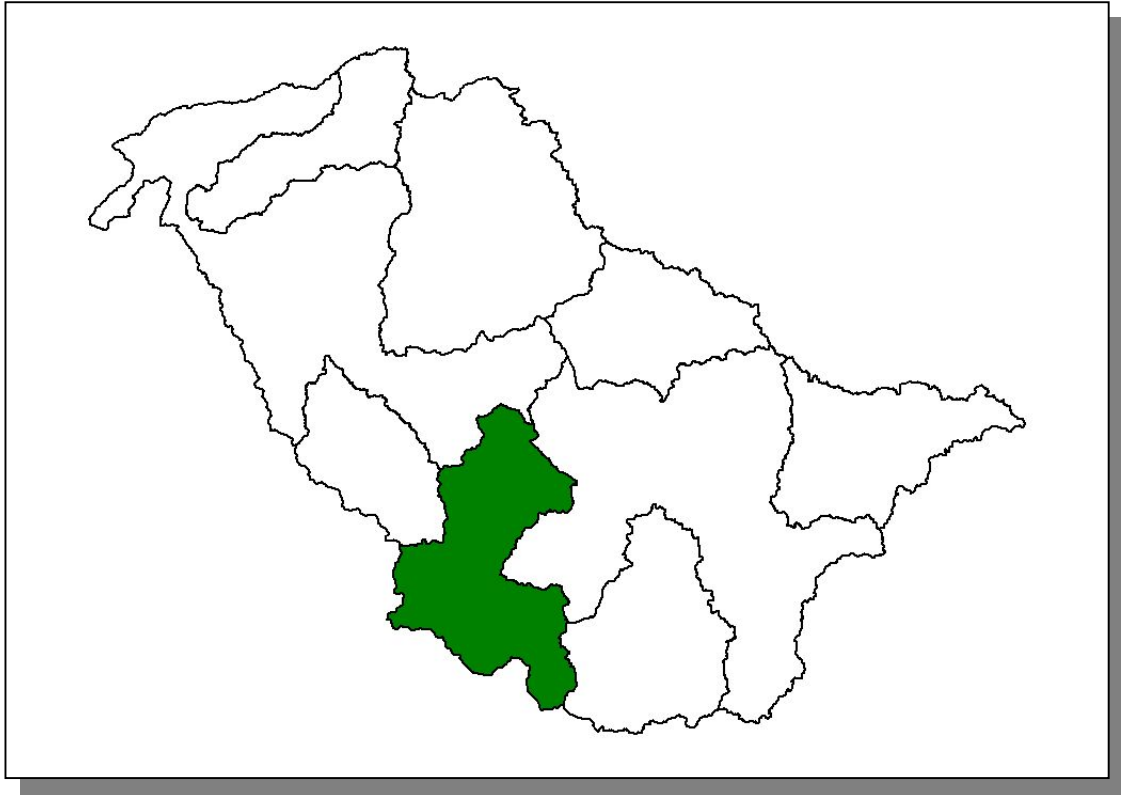
County	<b>INVENTORY</b>		<b>REMOVAL RATE</b>	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Hickman	297.2	297.2	5.8	23.0
Humphreys	241.2	241.2	3.7	14.4
Perry	223.6	223.6	5.1	22.0
<b>Totals</b>	<b>762.0</b>	<b>762.0</b>	<b>14.6</b>	<b>59.4</b>

**Table 4-32. Forest Acreage and Annual Removal Rates (1987-1994) in Subwatershed 0604000305.**

<b>CROPS</b>	<b>TONS/ACRE/YEAR</b>
Legume (Pastureland)	0.68
Grass (Pastureland)	1.28
Grass (Hayland)	0.18
Legumes (Hayland)	1.50
Legumes, Grass (Hayland)	0.19
Grass, Forbs, Legumes (Mixed Pasture)	1.06
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	24.88
Sorghum (Row Crops)	5.76
Soybeans (Row Crops)	13.83
Tobacco (Row Crops)	7.68
Conservation Reserve Program Lands	0.44
Non-Agricultural Land Use	0.00
Other Land in Farms	0.06
Farmsteads and Ranch Headquarters	0.31

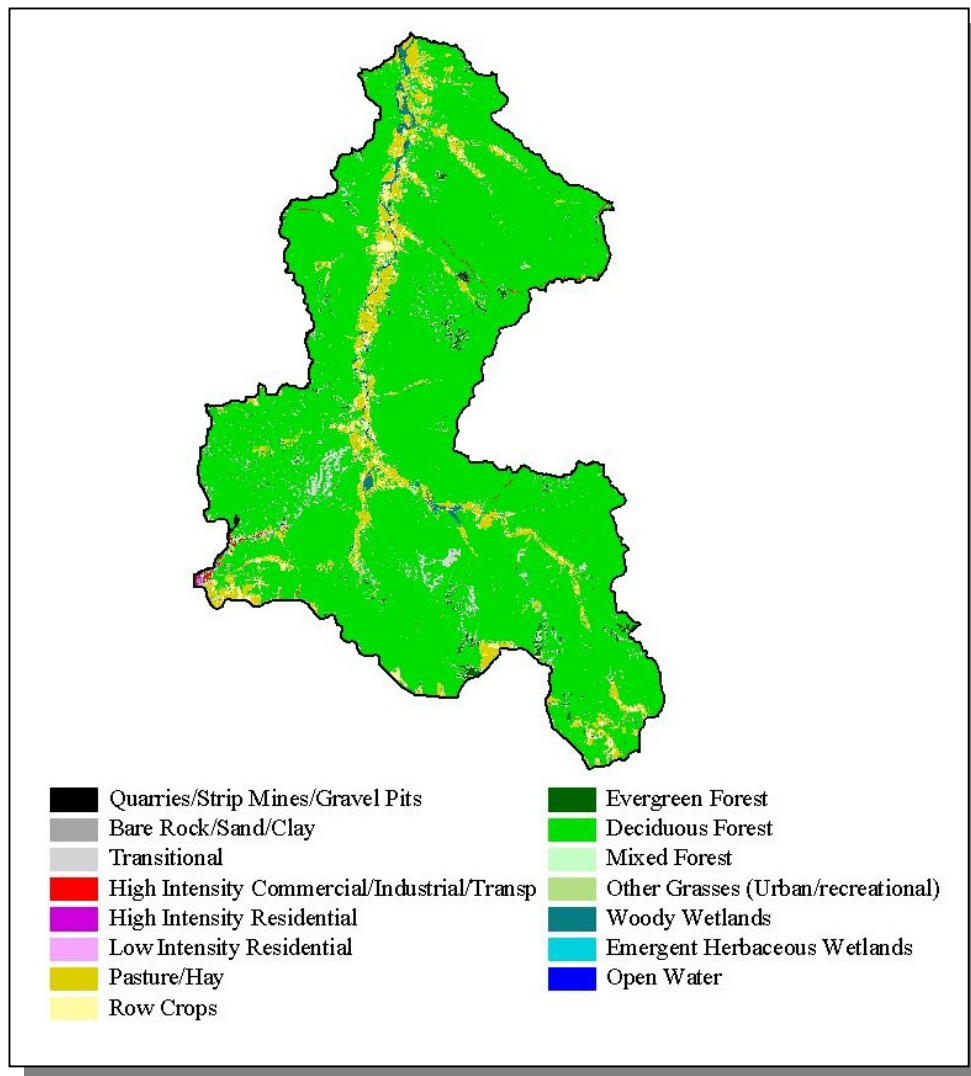
**Table 4-33. Annual Estimated Soil Loss in Subwatershed 0604000305.**

**4.2.F. 0604000306 (Big Swan Creek).**

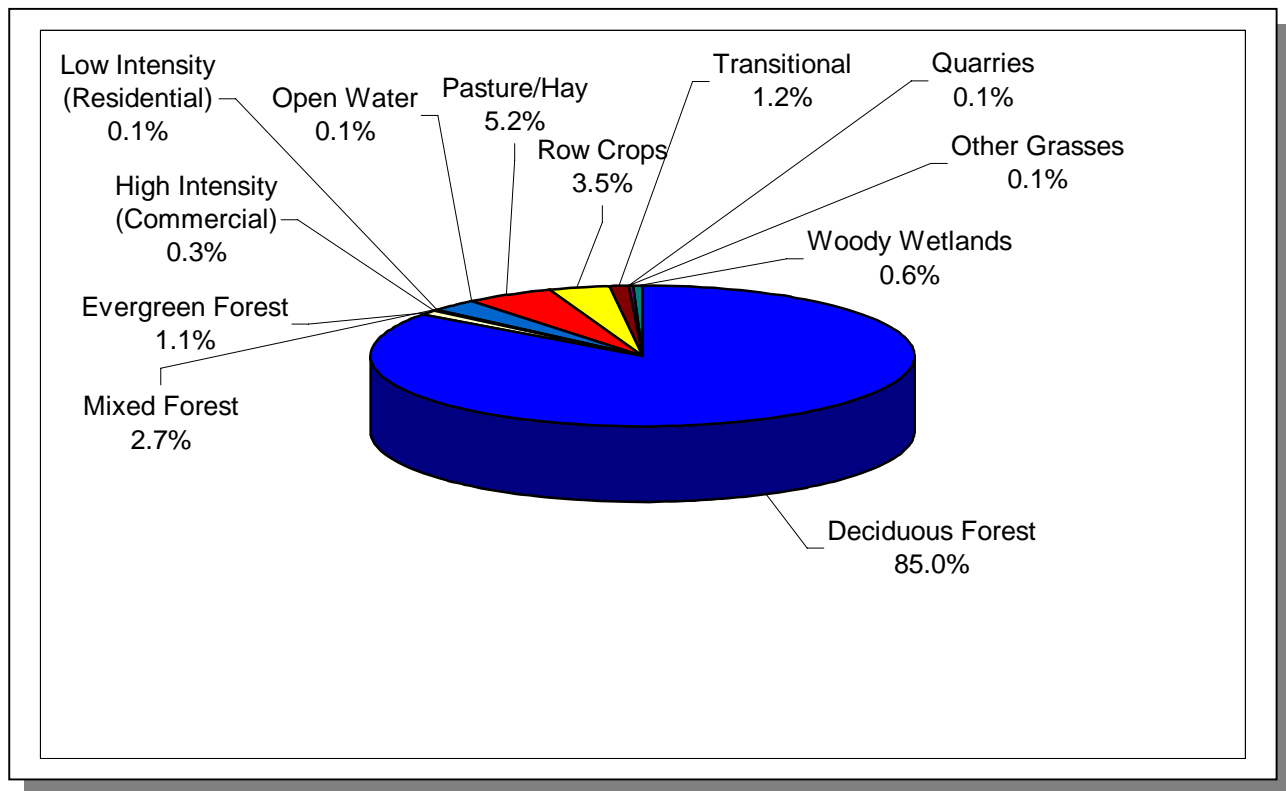


**Figure 4-61. Location of Subwatershed 0604000306.** All Lower Duck HUC-10 subwatershed boundaries are shown for reference.

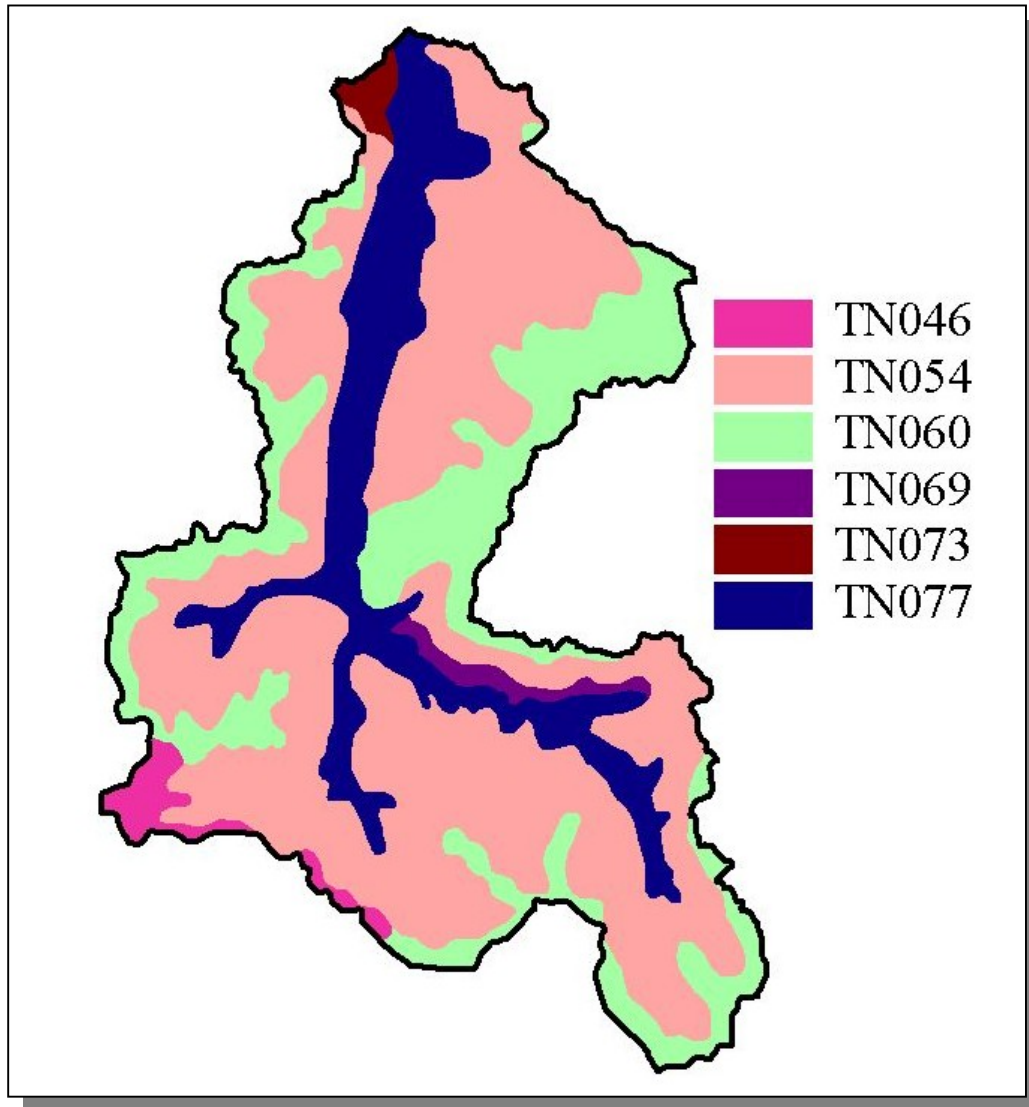
4.2.F.i. General Description.



**Figure 4-62. Illustration of Land Use Distribution in Subwatershed 0604000306.**



**Figure 4-63. Land Use Distribution in Subwatershed 0604000306.** More information is provided in Appendix IV.



**Figure 4-64. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000306.**

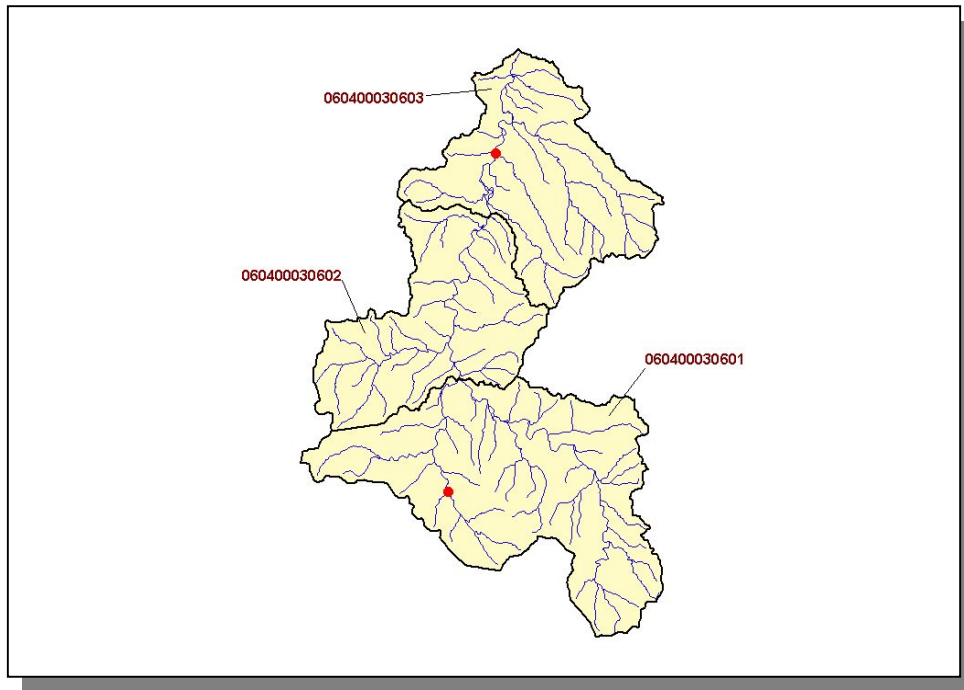
STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hr)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN046	0.00	B	1.98	5.09	Silty Loam	0.38
TN054	0.00	C	3.04	4.84	Loam	0.32
TN060	5.00	B	1.30	5.32	Silty Loam	0.39
TN069	0.00	C	2.06	5.36	Loam	0.34
TN073	0.00	B	2.97	5.21	Loam	0.34
TN077	4.00	C	2.16	5.03	Loam	0.34

**Table 4-34. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000306.** More information is provided in Appendix IV.



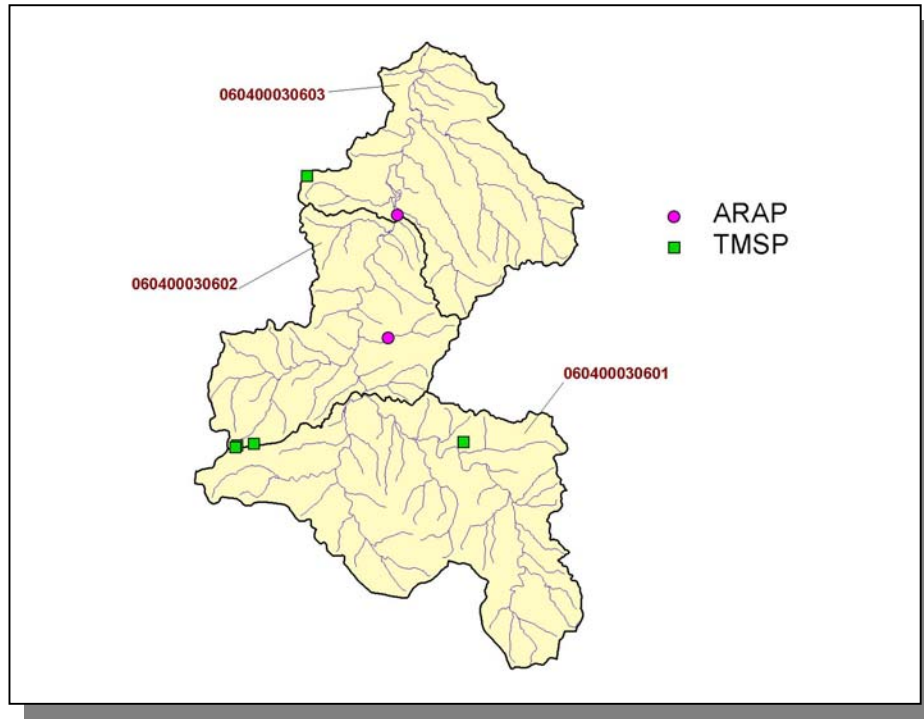
County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-1997)
	1990	1997	2000		1990	1997	2000	
Hickman	16,754	19,926	22,295	9.30	1,559	1,854	2,074	33.0
Lawrence	35,303	39,095	39,926	0.24	86	95	97	12.8
Lewis	9,247	10,789	11,367	33.71	3,118	3,637	3,832	22.9
Maury	54,812	68,268	69,498	0.09	52	65	66	26.9
<b>Totals</b>	<b>116,116</b>	<b>138,078</b>	<b>143,086</b>		<b>4,815</b>	<b>5,651</b>	<b>6,089</b>	<b>26.0</b>

*Table 4-35. Population Estimates in Subwatershed 0604000306.*

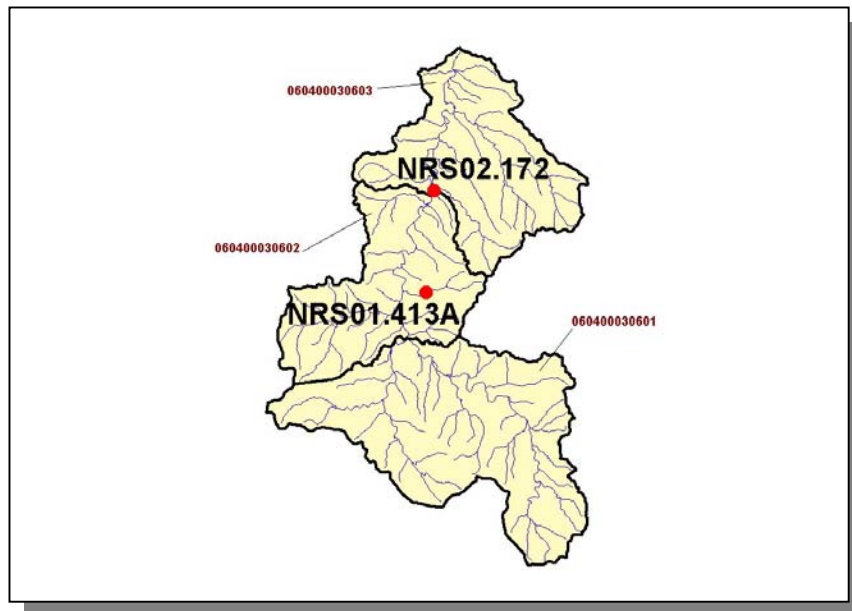


**Figure 4-65. Location of STORET Monitoring Sites in Subwatershed 0604000306.** Subwatershed 060400030601, 060400030602, and 060400030603 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.

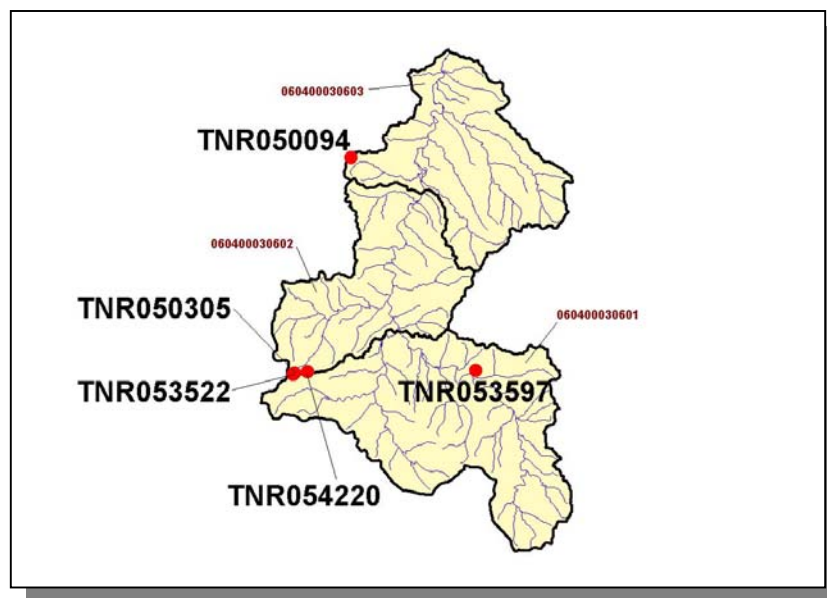
**4.2.F.ii.** Point Source Contributions.



**Figure 4-66. Location of Active Point Source Facilities in Subwatershed 0604000306.** Subwatershed 060400030601, 060400030602 and 060400030603 boundaries are shown for reference. More information is provided in Appendix IV.



**Figure 4-67. Location of ARAP Sites (Individual Permits) in Subwatershed 0604000306.** Subwatershed 060400030601, 060400030602 and 060400030603 boundaries are shown for reference. More information is provided in Appendix IV.



**Figure 4-68. Location of TMSF Facilities in Subwatershed 0604000306.** Subwatershed 060400030601, 060400030602 and 060400030603 boundaries are shown for reference. More information is provided in Appendix IV.

**4.2.F.iii.** Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Milk Cow	Cattle	Chickens (Layers)	Chickens Sold	Hogs	Sheep
1,774	24	3,240	6	<5	653	18

**Table 4-36. Summary of Livestock Count Estimates in Subwatershed 0604000306.** According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

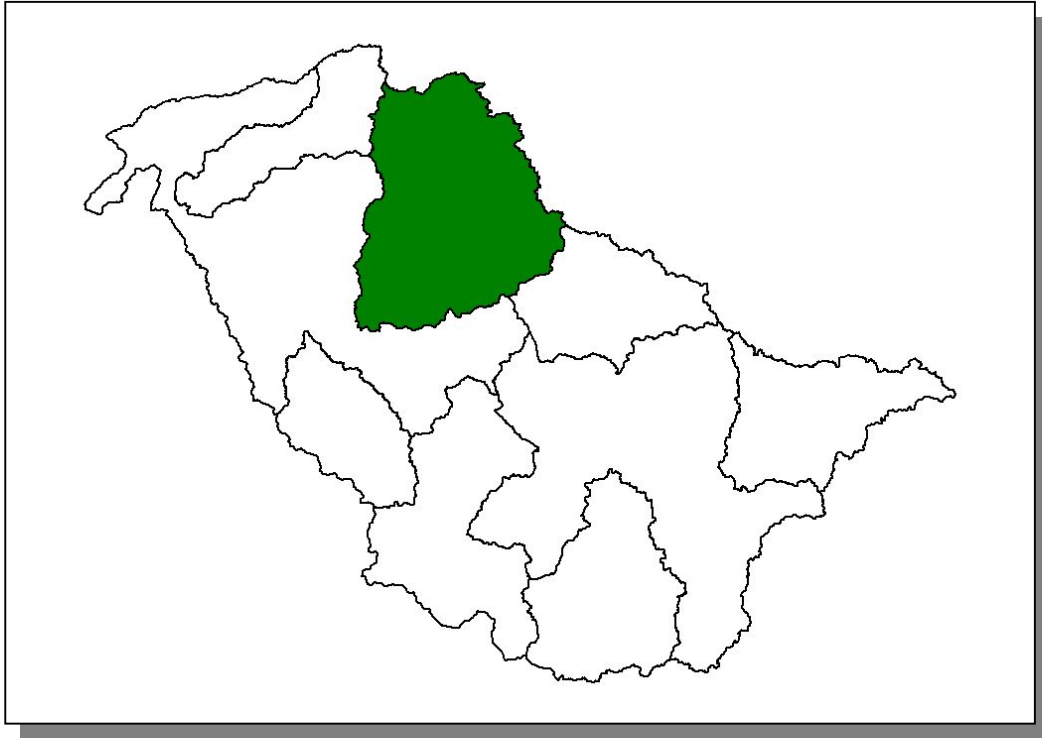
County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Hickman	297.2	297.2	5.8	23.0
Lawrence	199.8	199.8	6.6	27.1
Lewis	158.0	158.0	4.0	10.2
<b>Total</b>	<b>655.0</b>	<b>655.0</b>	<b>16.4</b>	<b>60.3</b>

**Table 4-37. Forest Acreage and Average Annual Removal Rates (1987-1994) in Subwatershed 0604000306.**

CROPS	TONS/ACRE/YEAR
Legume (Pastureland)	0.68
Grass (Pastureland)	1.45
Grass (Hayland)	0.21
Legumes (Hayland)	1.05
Legumes, Grass (Hayland)	0.31
Grass, Forbs, Legumes (Mixed Pasture)	0.53
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	5.21
Cotton (Row Crops)	8.07
Soybeans (Row Crops)	5.98
Tobacco (Row Crops)	7.68
All Other Row Crops	11.45
Wheat (Close-Grown Cropland)	14.15
All Other Close-Grown Cropland	1.80
Other Cropland not Planted	0.88
Conservation Reserve Program Lands	0.47
Non-Agricultural Land Use	0.00
Farmsteads and Ranch Headquarters	0.19

**Table 4-38. Annual Estimated Total Soil Loss in Subwatershed 0604000306.**

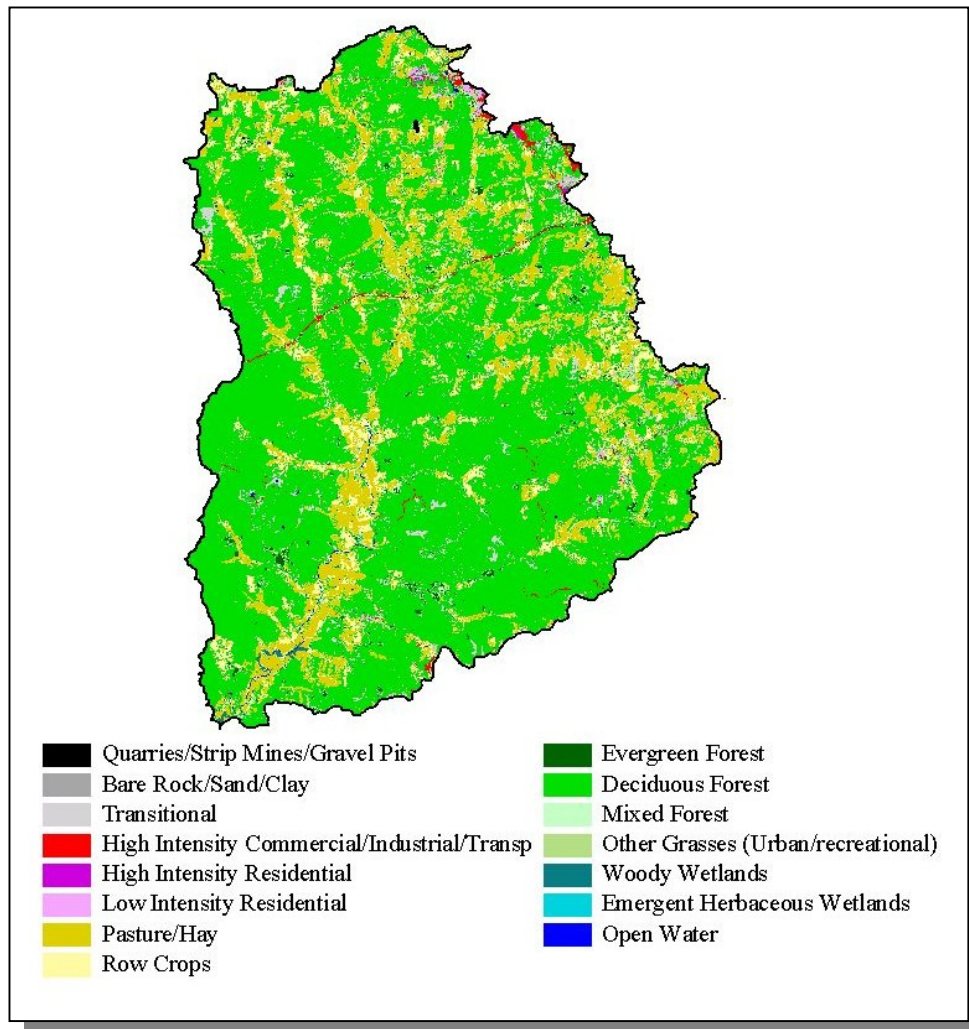
**4.2.G. 0604000307 (Piney River).**



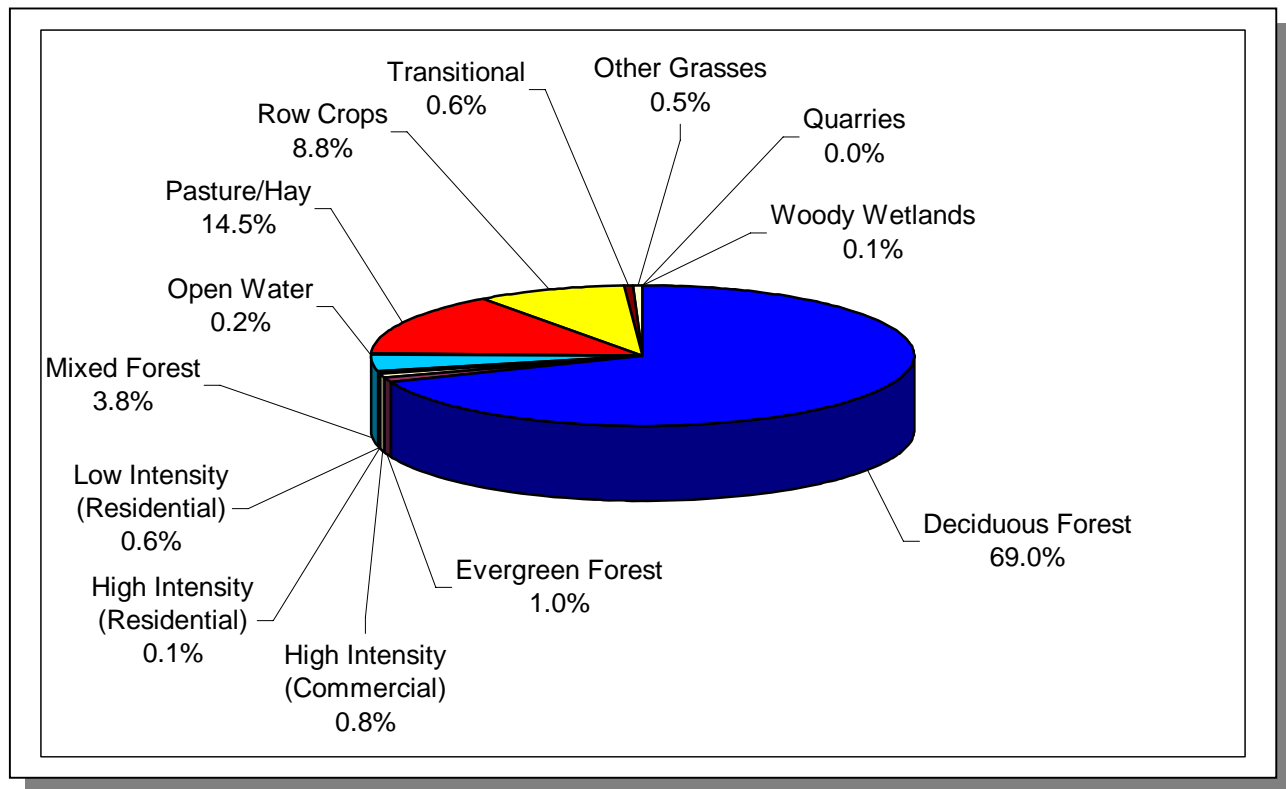
**Figure 4-69. Location of Subwatershed 0604000307.** All Lower Duck HUC-10 subwatershed boundaries are shown for reference.



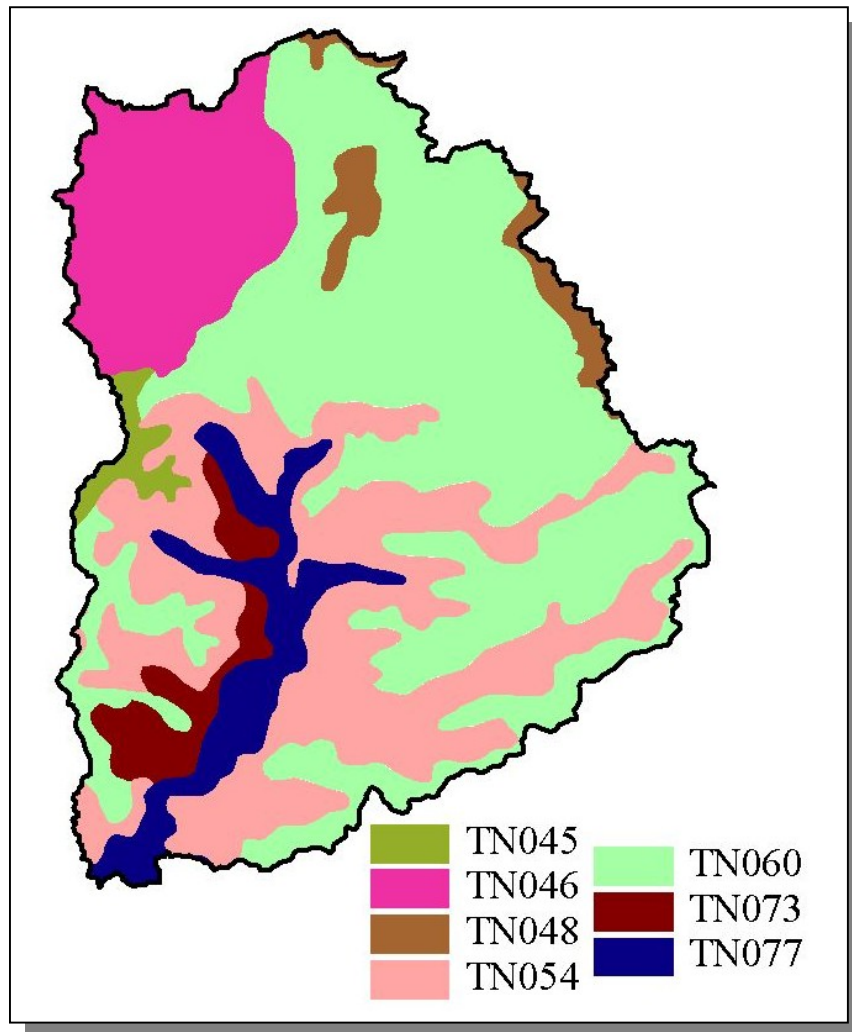
4.2.G.i. General Description.



*Figure 4-70. Illustration of Land Use Distribution in Subwatershed 0604000307.*



**Figure 4-71. Land Use Distribution in Subwatershed 0604000307.** More information is provided in Appendix IV.



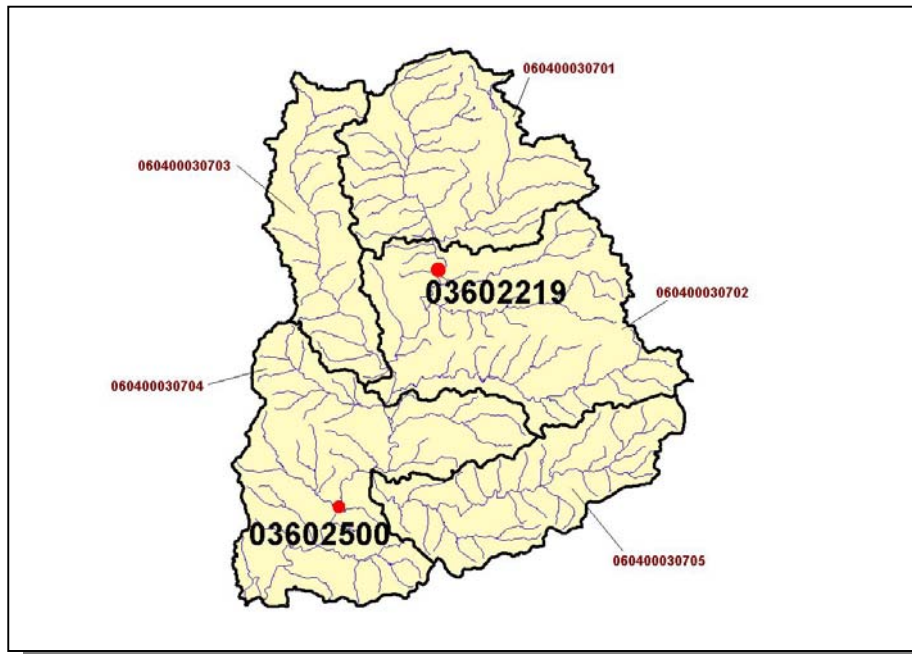
**Figure 4-72. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000307.**

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGI C GROUP	PERMEABILITY (in/hr)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN045	0.00	B	1.95	5.45	Loam	0.35
TN046	0.00	B	1.98	5.09	Silty Loam	0.38
TN048	8.00	C	1.38	5.06	Silty Loam	0.42
TN054	0.00	C	3.04	4.84	Loam	0.32
TN060	5.00	B	1.30	5.32	Silty Loam	0.39
TN073	0.00	B	2.97	5.21	Loam	0.34
TN077	4.00	C	2.16	5.03	Loam	0.34

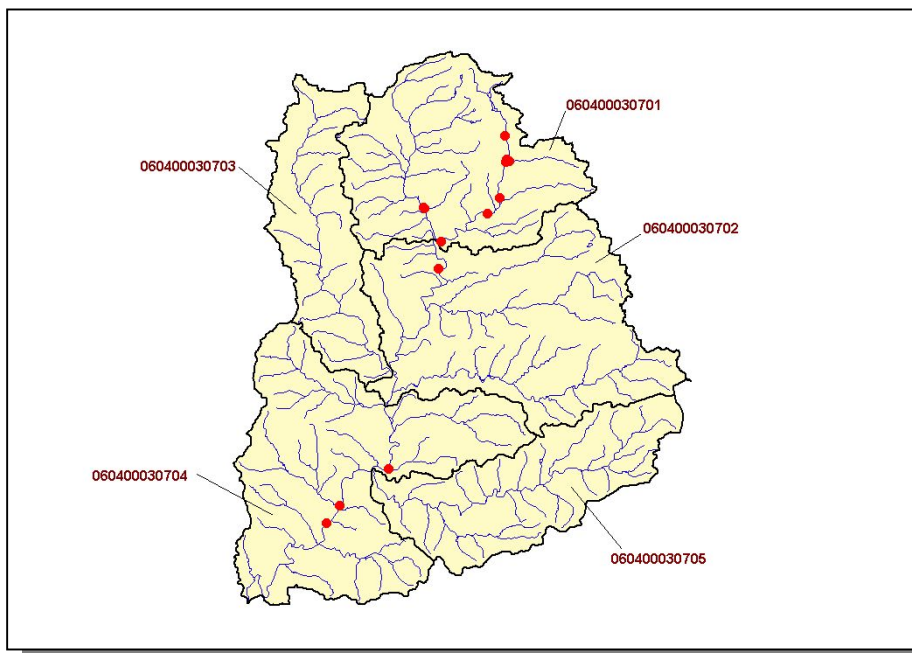
**Table 4-39. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000307.** More information is provided in Appendix IV.

County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-1997)
	1990	1997	2000		1990	1997	2000	
Dickson	35,061	40,937	43,156	15.79	5,536	6,464	6,814	23.1
Hickman	16,754	19,926	22,295	23.6	3,954	4,702	5,261	33.1
Humphreys	15,795	16,839	17,929	0.16	25	26	28	12.0
<b>Totals</b>	<b>67,610</b>	<b>77,702</b>	<b>83,380</b>		<b>9,515</b>	<b>11,192</b>	<b>12,103</b>	<b>27.2</b>

*Table 4-40. Population Estimates in Subwatershed 0604000307.*

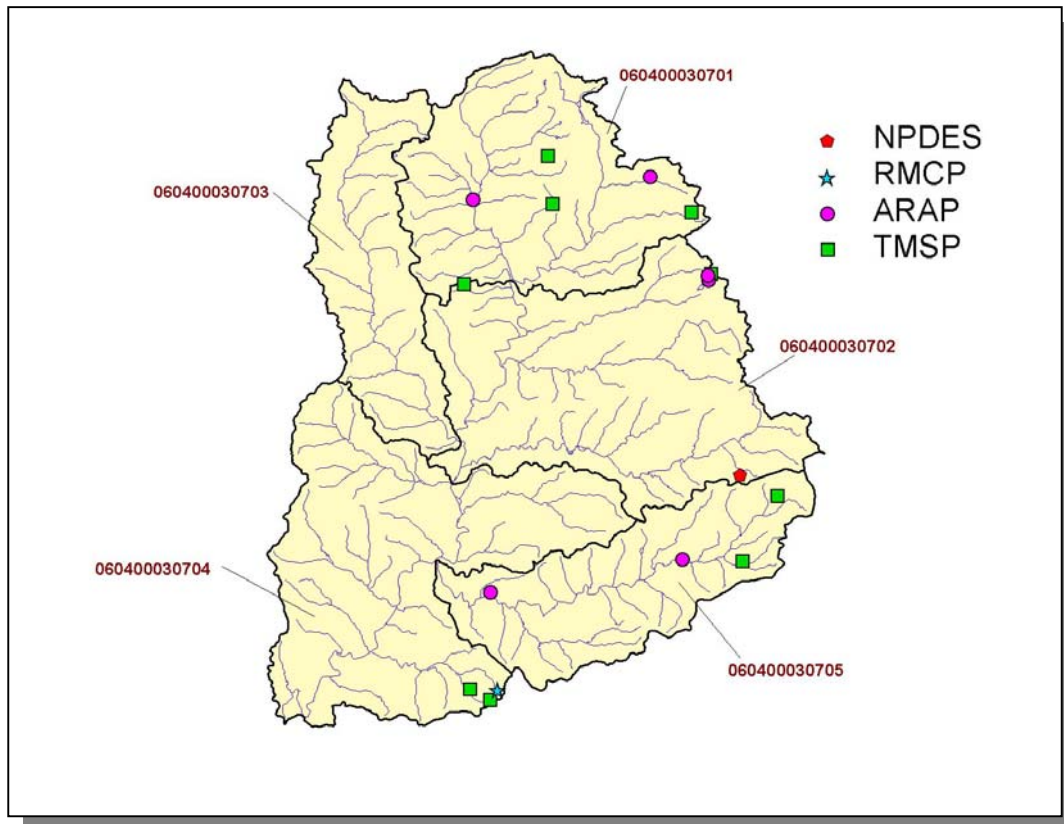


**Figure 4-73. Location of Historical Streamflow Data Collection Sites in Subwatershed 0604000307.** Subwatershed 060400030701, 060400030702, 060400030703, 060400030704, and 060400030705 boundaries are shown for reference. More information is provided in Appendix IV.



**Figure 4-74. Location of STORET Monitoring Sites in Subwatershed 0604000307.** Subwatershed 060400030701, 060400030702, 060400030703, 060400030704, and 060400030705 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.

4.2.G.ii. Point Source Contributions.

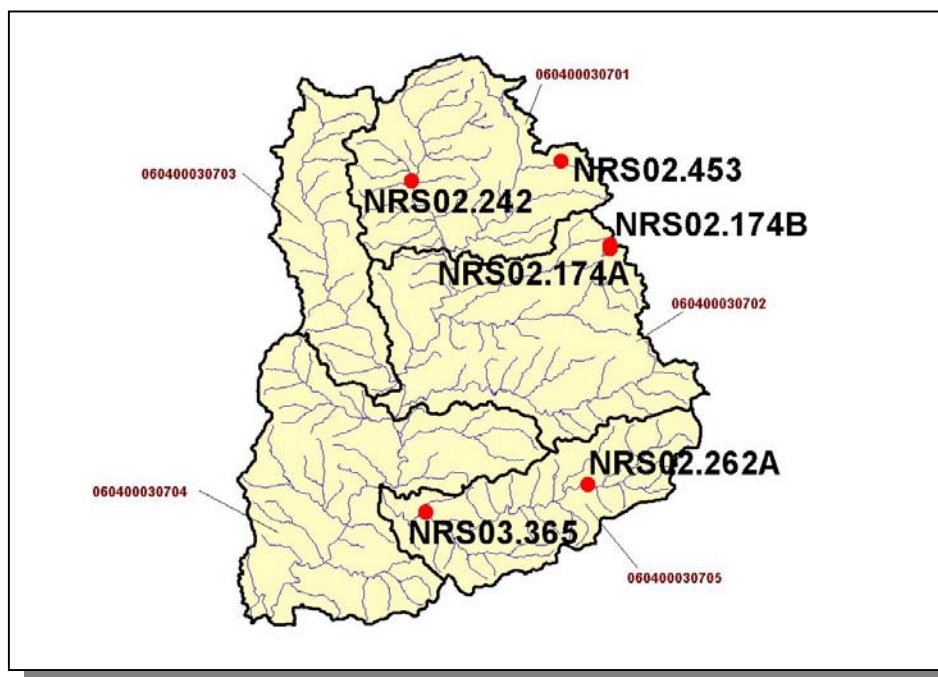


**Figure 4-75. Location of Active Point Source Facilities in Subwatershed 0604000307.** Subwatershed 0604000307, 0604000307, 0604000307, 0604000307, and 0604000307 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



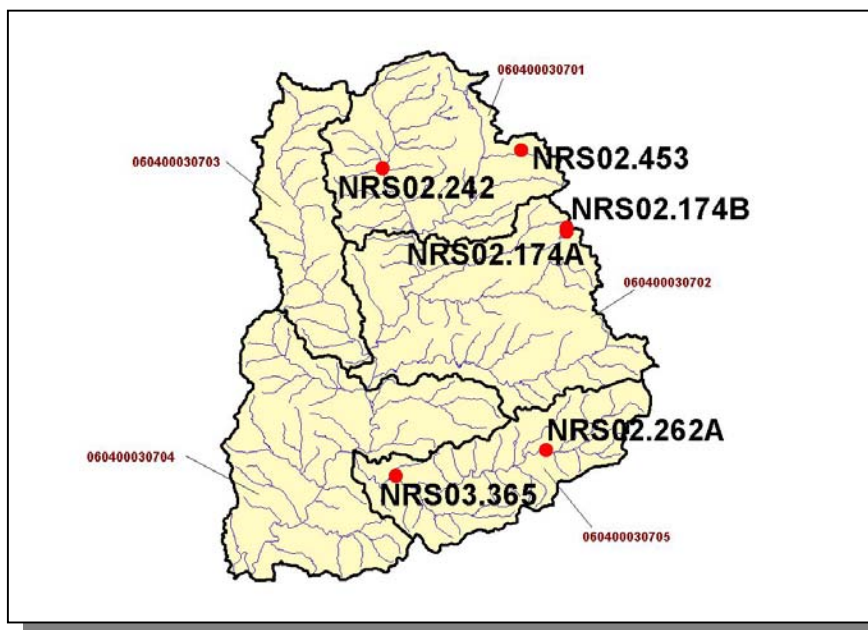


**Figure 4-76. Location of NPDES Facilities in Subwatershed 0604000307.** Subwatershed 0604000307, 0604000307, 0604000307, 0604000307, and 0604000307 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.

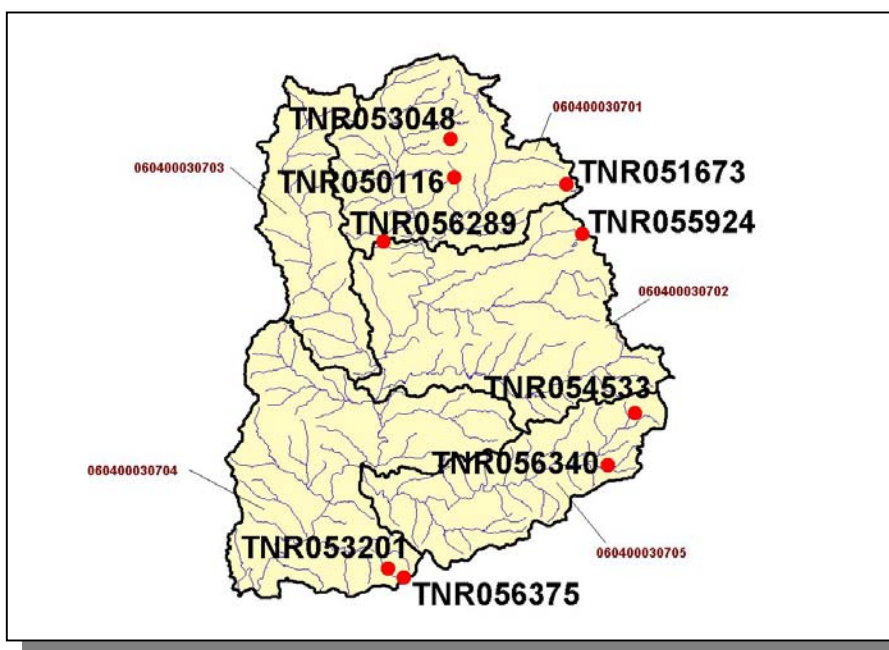


**Figure 4-77. Location of Ready Mix Concrete Plants in Subwatershed 0604000307.** Subwatershed 0604000307, 0604000307, 0604000307, 0604000307, and 0604000307 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.





**Figure 4-78. Location of ARAP Sites (Individual Permits) in Subwatershed 0604000307.** Subwatershed 0604000307, 0604000307, 0604000307, 0604000307, and 0604000307 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.



**Figure 4-79. Location of TMSP Facilities in Subwatershed 0604000307.** Subwatershed 0604000307, 0604000307, 0604000307, 0604000307, and 0604000307 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.

**4.2.G.iii.** Nonpoint Source Contributions.

<b>LIVESTOCK (COUNTS)</b>						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
3,458	12,964	18	26	75	1,534	21

**Table 4-41. Summary of Livestock Count Estimates in Subwatershed 0604000307.**  
According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

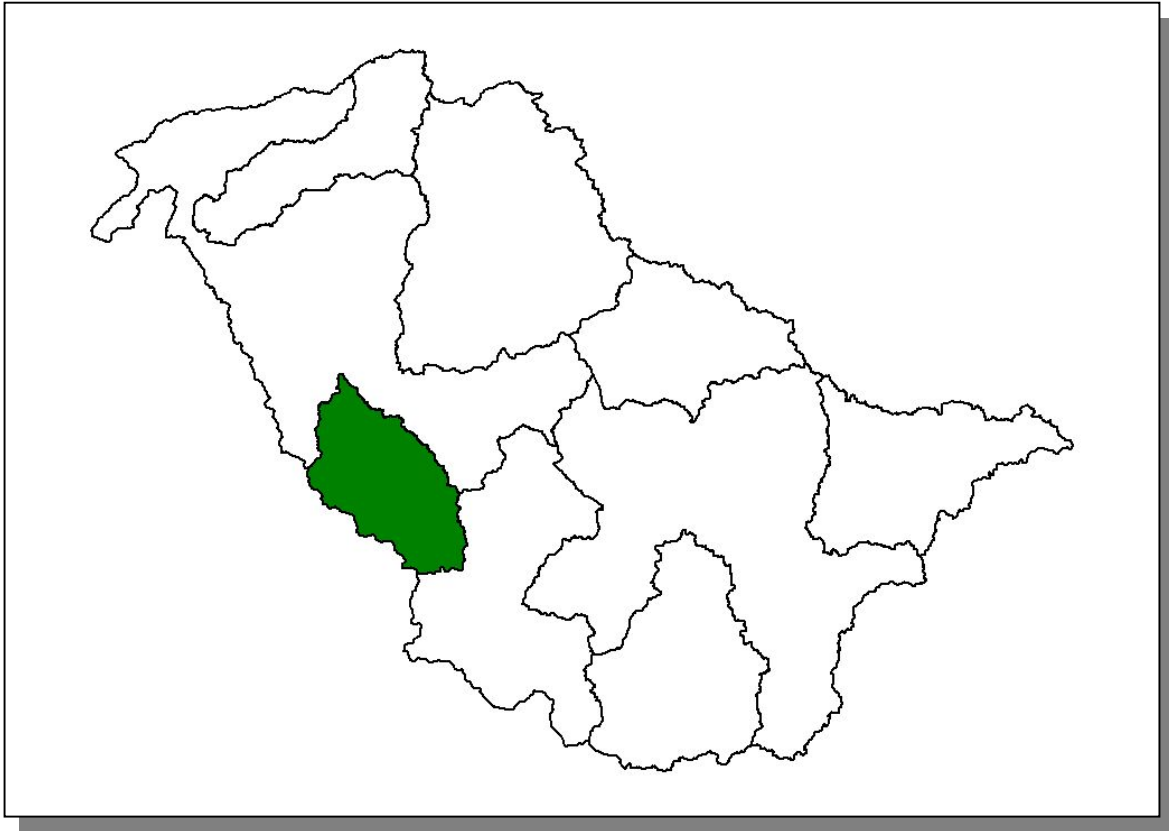
County	<b>INVENTORY</b>		<b>REMOVAL RATE</b>	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Dickson	174.3	174.3	1.8	7.7
Hickman	297.2	297.2	5.8	23.0
Humphreys	241.2	241.2	3.7	14.4
<b>Totals</b>	<b>712.7</b>	<b>712.7</b>	<b>11.3</b>	<b>45.1</b>

**Table 4-42. Forest Acreage and Average Removal Rates (1987-1994) in Subwatershed 0604000307.**

<b>CROPS</b>	<b>TONS/ACRE/YEAR</b>
Legume (Pastureland)	0.68
Grass (Pastureland)	1.00
Grass (Hayland)	0.25
Legumes (Hayland)	1.06
Legumes, Grass (Hayland)	0.40
Grass, Forbs, Legumes (Mixed Pasture)	0.81
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	3.16
Sorgham (Row Crops)	5.80
Soybeans (Row Crops)	5.46
Tobacco (Row Crops)	7.68
Vineyard (Horticulture)	1.05
Other Vegetable and Truck Crop	7.71
Conservation Reserve Program Lands	0.51
Non-Agricultural Land Use	0.00
Other Land in Farms	0.03
Farmsteads and Ranch Headquarters	1.38

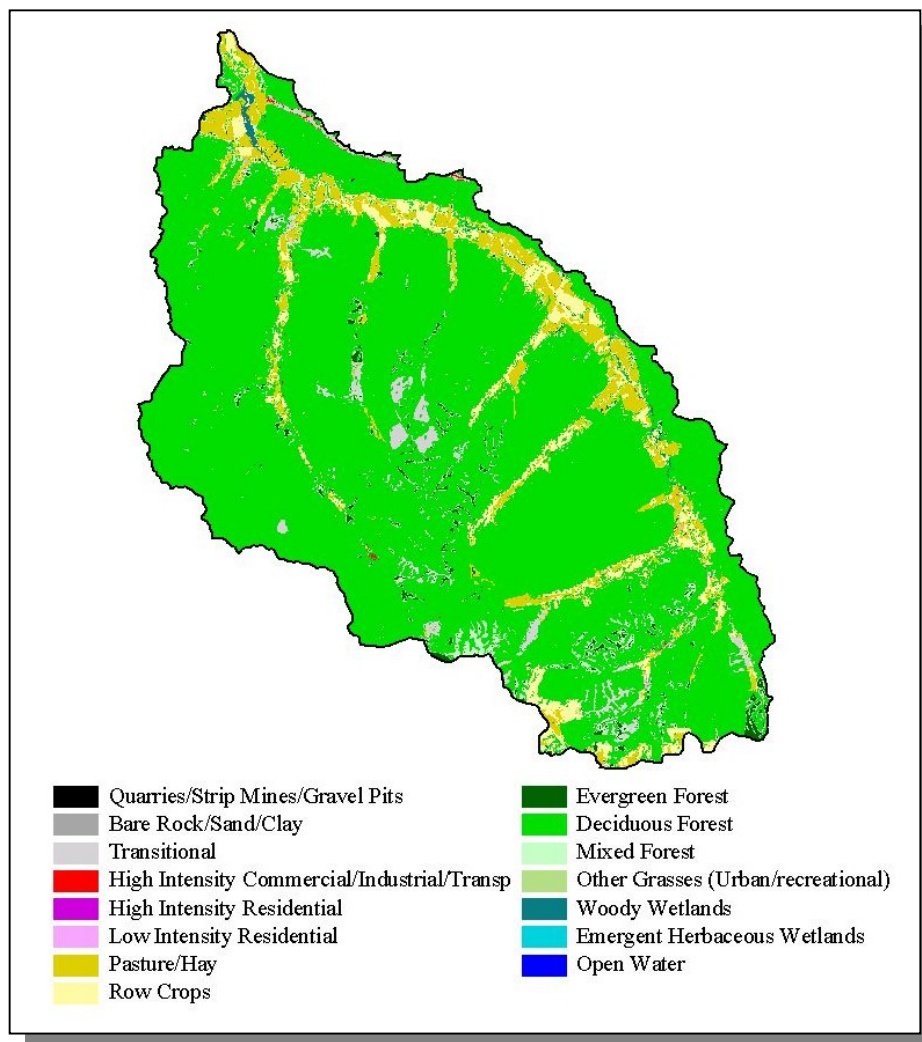
**Table 4-43. Annual Estimated Total Soil Loss in Subwatershed 0604000307.**

**4.2.H. 0604000308 (Beaverdam Creek).**

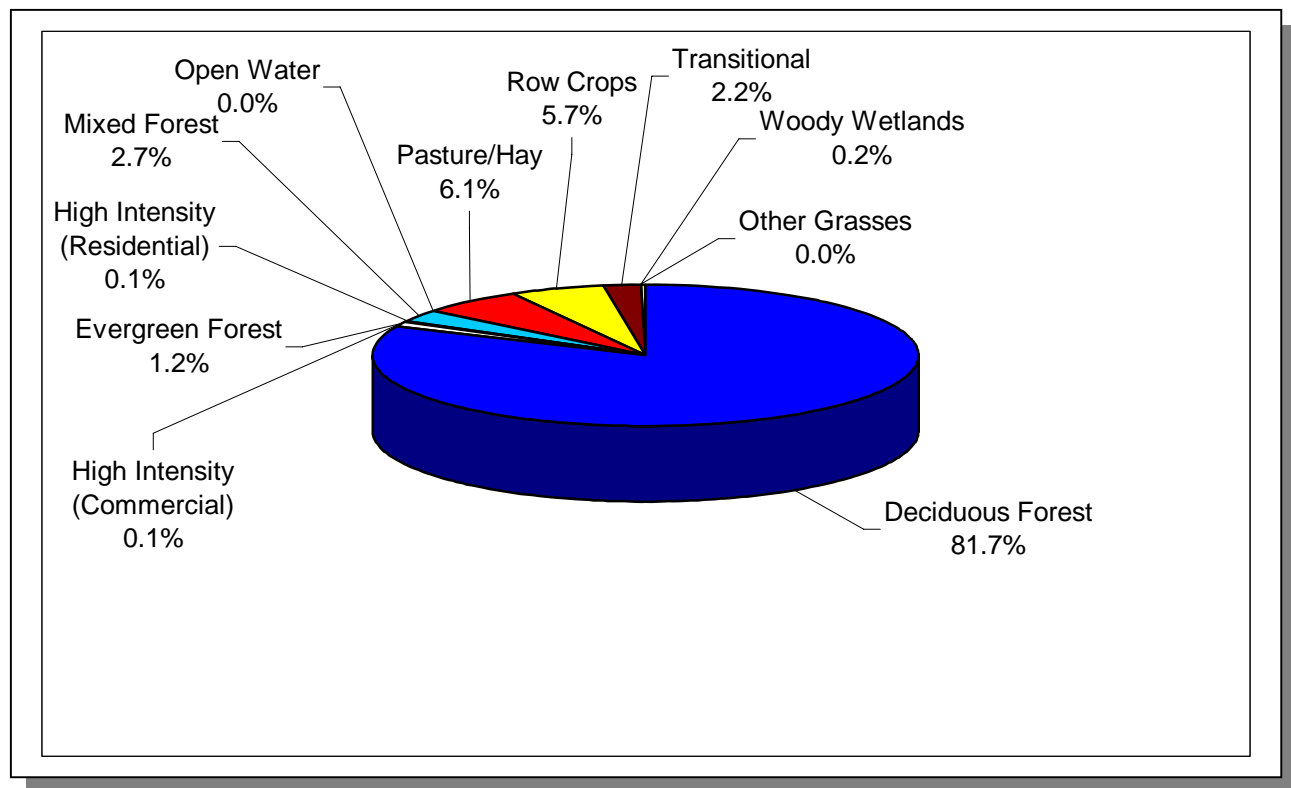


**Figure 4-80. Location of Subwatershed 0604000308.** All Lower Duck HUC-10 subwatershed boundaries are shown for reference.

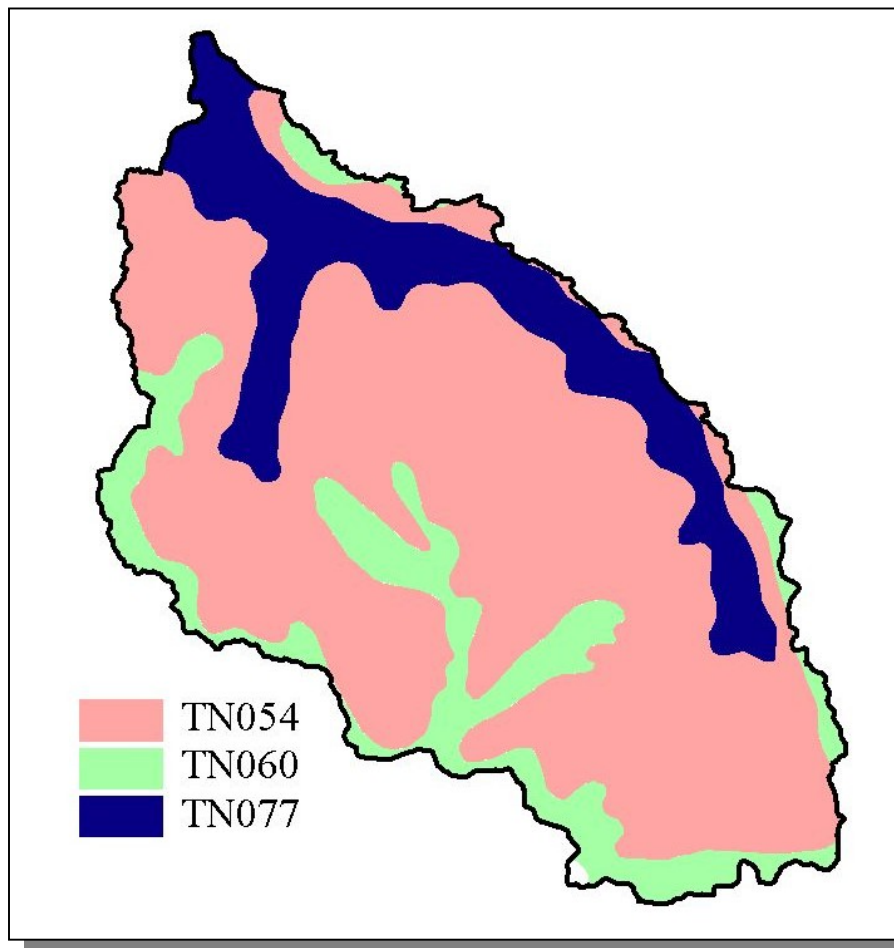
4.2.H.i. General Description.



**Figure 4-81. Illustration of Land Use Distribution in Subwatershed 0604000308.**



**Figure 4-82. Land Use Distribution in Subwatershed 0604000308.** More information is provided in Appendix IV.



**Figure 4-83. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000308.**

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hr)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN054	0.00	C	3.04	4.84	Loam	0.32
TN060	5.00	B	1.30	5.32	Silty Loam	0.39
TN077	4.00	C	2.16	5.03	Loam	0.34

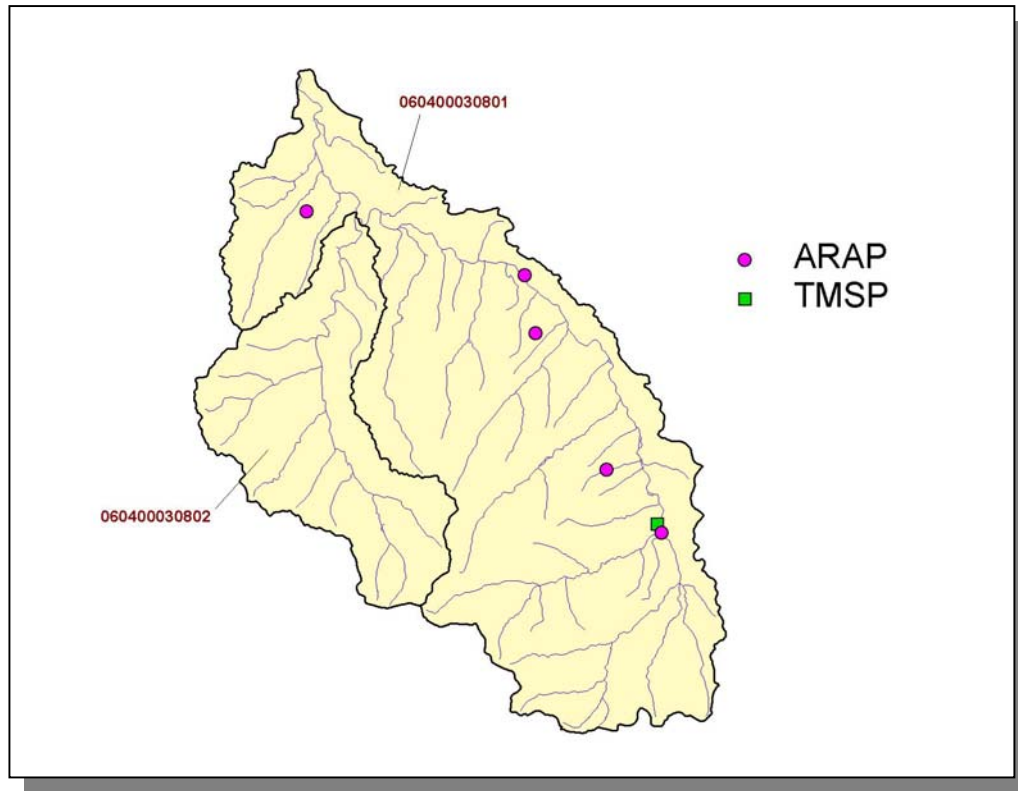
**Table 4-44. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000308.** More information is provided in Appendix IV.

County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-1997)
	1990	1997	2000		1990	1997	2000	
Hickman	16,754	19,926	22,295	12.42	2,081	2,475	2,770	33.1
Lewis	9,247	10,789	11,367	1.75	162	189	199	22.8
<b>Totals</b>	<b>26,001</b>	<b>30,715</b>	<b>33,662</b>		<b>2,243</b>	<b>2,664</b>	<b>2,969</b>	<b>32.4</b>

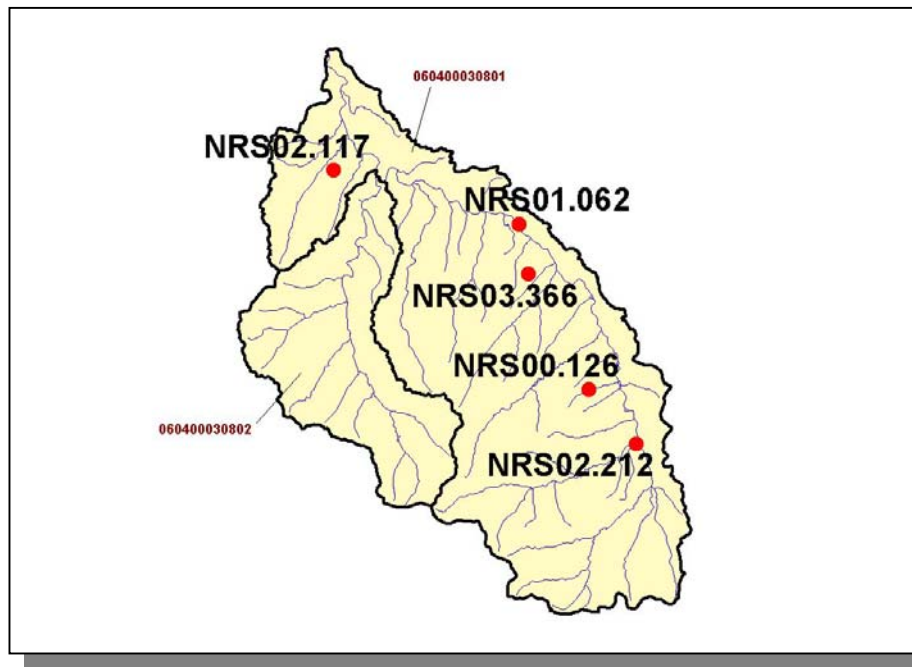
*Table 4-45. Population Estimates in Subwatershed 0604000308.*



**4.2.H.ii.** Point Source Contributions.



**Figure 4-84. Location of Active Point Source Facilities in Subwatershed 0604000308.** Subwatershed 060400030801 and 060400030802 boundaries are shown for reference. More information is provided in Appendix IV.



**Figure 4-85. Location of ARAP Sites (Individual Permits) in Subwatershed 0604000308.** Subwatershed 060400030801 and 060400030802 boundaries are shown for reference. More information is provided in Appendix IV.



**Figure 4-86. Location of TMSP Facilities in Subwatershed 0604000308.** Subwatershed 060400030801 and 060400030802 boundaries are shown for reference. More information is provided in Appendix IV.

**4.2.H.iii.** Nonpoint Source Contributions.

<b>LIVESTOCK (COUNTS)</b>						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens Sold	Hogs	Sheep
967	1,804	5	3	<5	308	5

**Table 4-46. Summary of Livestock Count Estimates in Subwatershed 0604000308.** According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

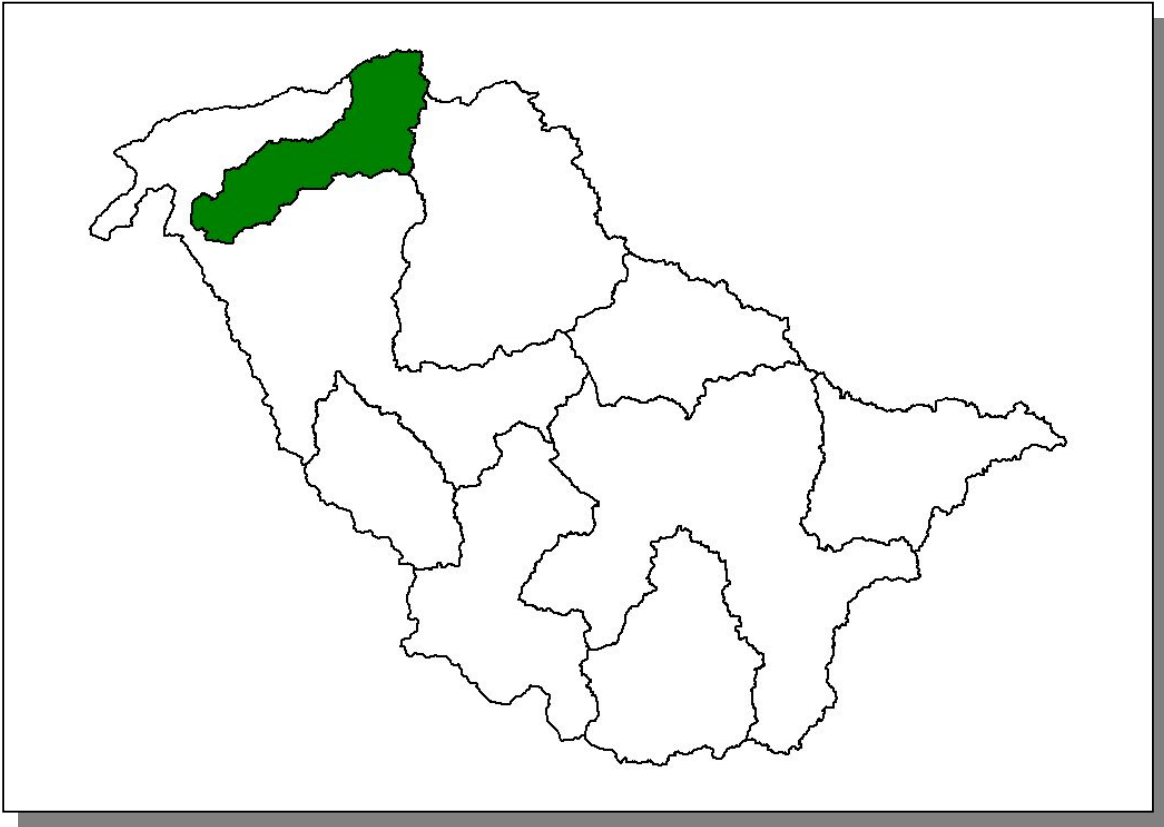
County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Hickman	297.2	297.2	5.8	23.0
Lewis	158.0	158.0	4.0	10.2
<b>Totals</b>	<b>455.2</b>	<b>455.2</b>	<b>9.8</b>	<b>33.2</b>

**Table 4-47. Forest Acreage and Average Removal Rates (1987-1994) in Subwatershed 0604000308.**

<b>CROPS</b>	<b>TONS/ACRE/YEAR</b>
Legume (Pastureland)	0.68
Grass (Pastureland)	1.23
Grass (Hayland)	0.13
Legumes (Hayland)	1.05
Legumes, Grass (Hayland)	0.30
Grass, Forbs, Legumes (Mixed Pasture)	0.82
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Soybeans (Row Crops)	5.35
Tobacco (Row Crops)	7.68
Other Cropland not Planted	0.65
Conservation Reserve Program Lands	0.71
Non-Agricultural Land Use	0.00
Farmsteads and Ranch Headquarters	0.12

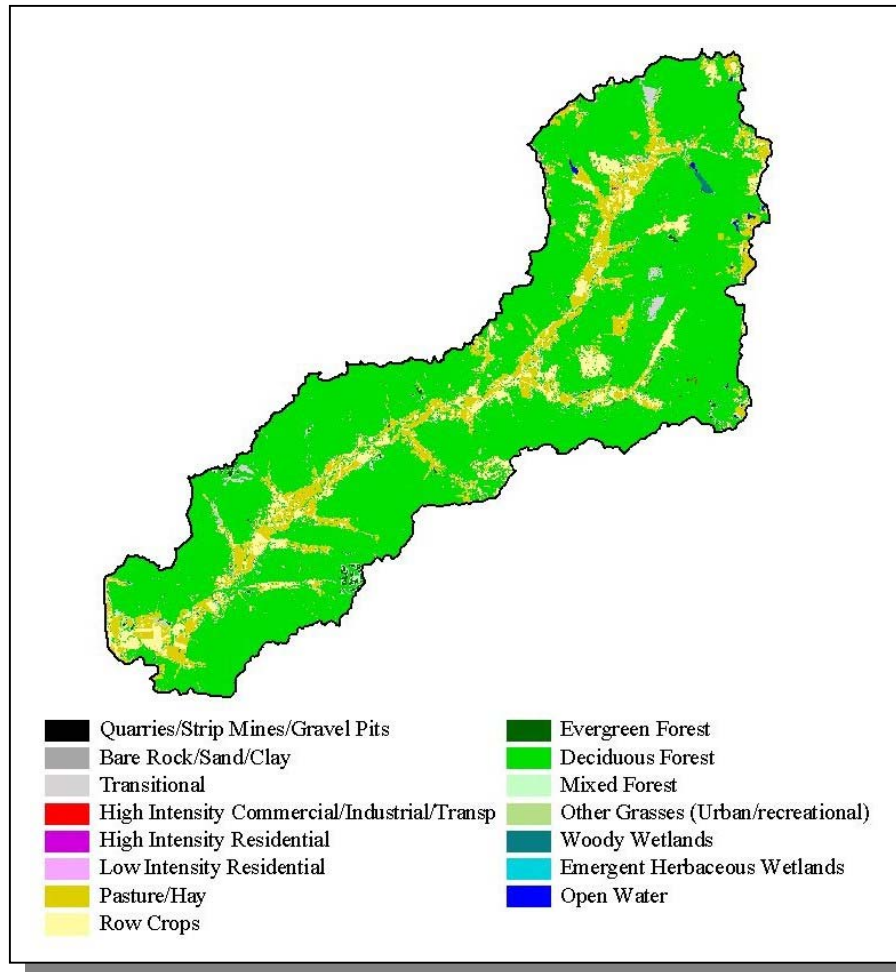
**Table 4-48. Annual Estimated Total Soil Loss in Subwatershed 0604000308.**

**4.2.1. 0604000309 (Hurricane Creek).**

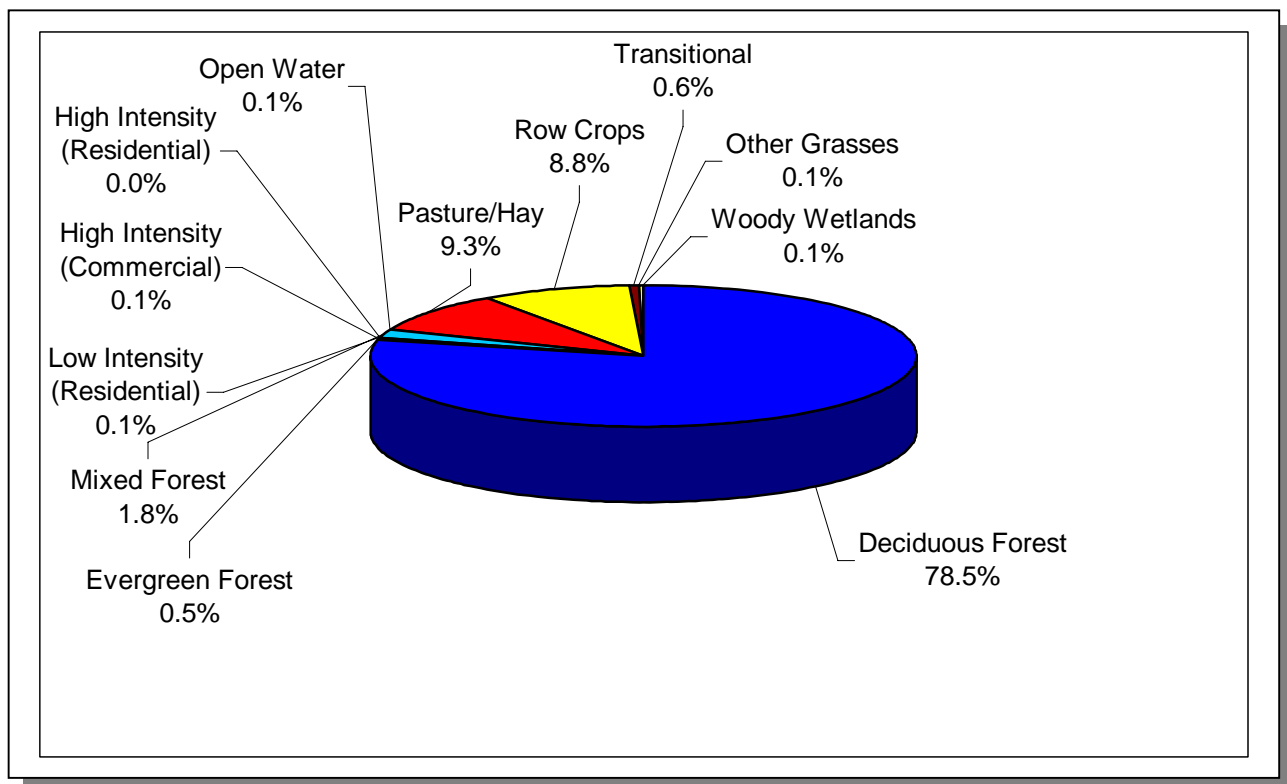


**Figure 4-87. Location of Subwatershed 0604000309.** All Lower Duck HUC-10 subwatershed boundaries are shown for reference.

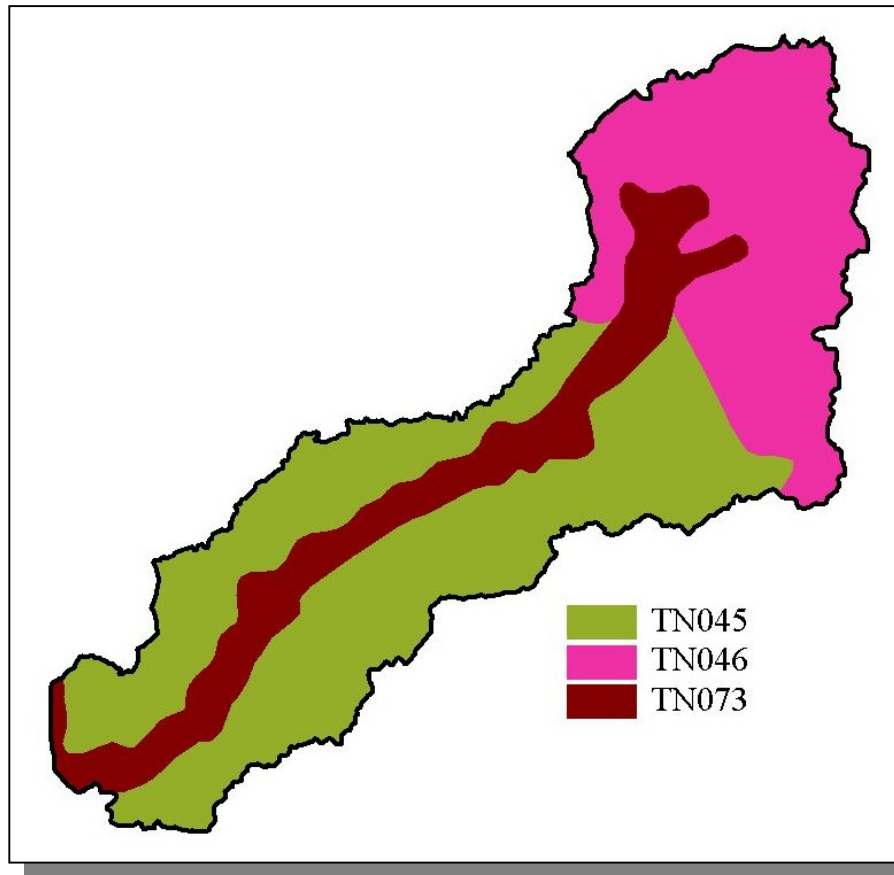
4.2.I.i. General Description.



*Figure 4-88. Illustration of Land Use Distribution in Subwatershed 0604000309.*



**Figure 4-89. Land Use Distribution in Subwatershed 0604000309.** More information is provided in Appendix IV.



**Figure 4-90. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000309.**

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hr)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN045	0.00	B	1.95	5.45	Loam	0.35
TN046	0.00	B	1.98	5.09	Silty Loam	0.38
TN073	0.00	B	2.97	5.21	Loam	0.34

**Table 4-49. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000309.** More information is provided in Appendix IV.

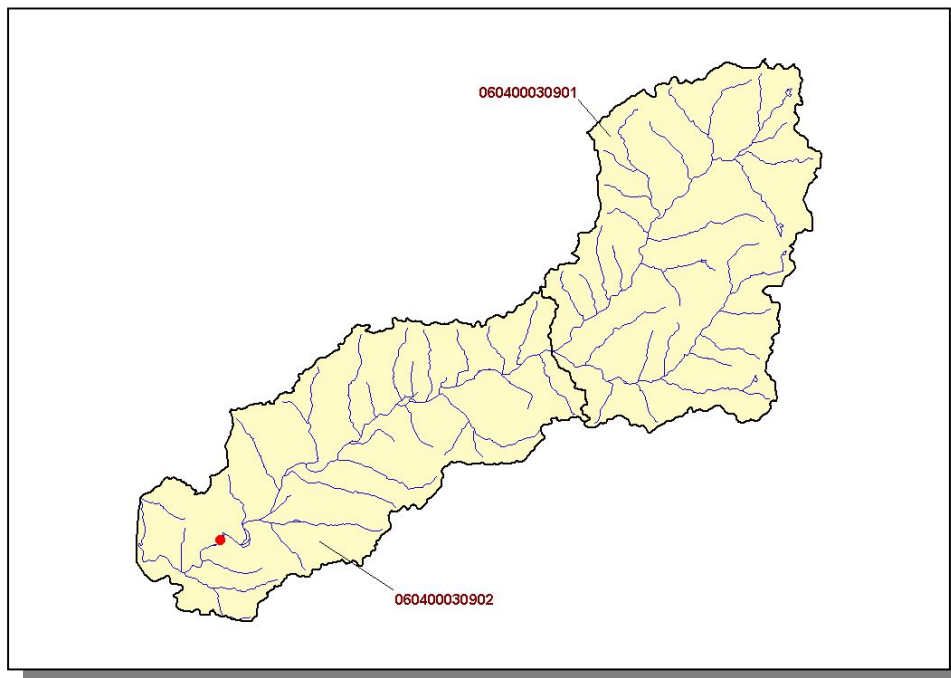


County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-1997)
	1990	1997	2000		1990	1997	2000	
Dickson	35,061	40,937	43,156	0.55	193	225	237	22.8
Humphreys	15,795	16,839	17,929	14.1	2,227	2,374	2,528	13.5
<b>Totals</b>	<b>50,856</b>	<b>57,776</b>	<b>61,085</b>		<b>2,420</b>	<b>2,599</b>	<b>2,765</b>	<b>14.3</b>

*Table 4-50. Population Estimates in Subwatershed 0604000309.*

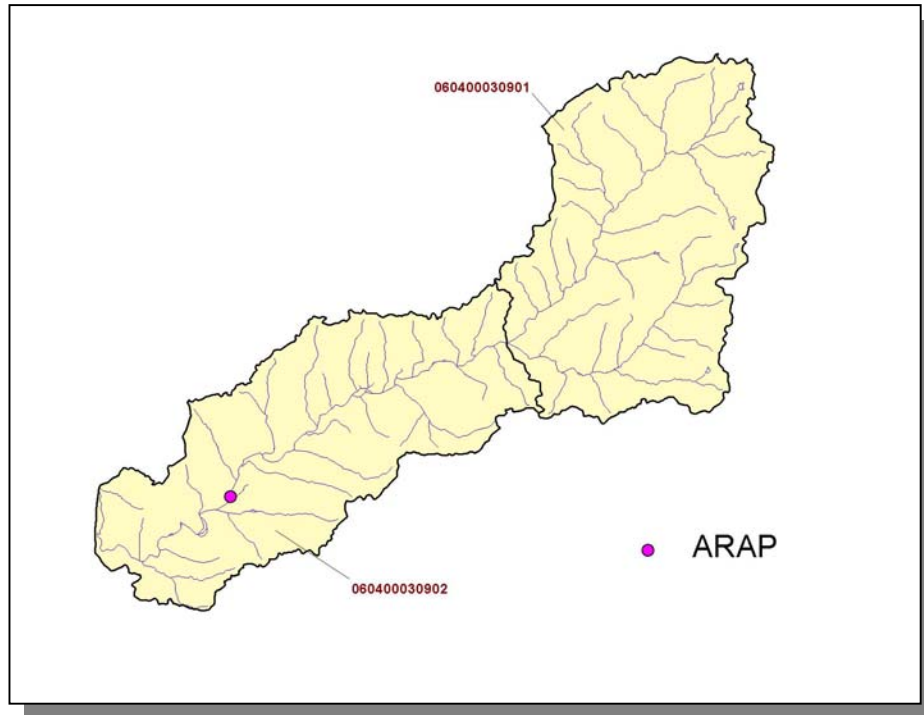


**Figure 4-91. Location of Historical Streamflow Data Collection Sites in Subwatershed 0604000309.** Subwatershed 060400030901 and 060400030902 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.



**Figure 4-92. Location of STORET Monitoring Sites in Subwatershed 0604000309.** Subwatershed 060400030901 and 060400030902 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.

**4.2.I.ii.** Point Source Contributions.



**Figure 4-93. Location of Active Point Source Facilities in Subwatershed 0604000309.** Subwatershed 060400030901 and 060400030902 boundaries are shown for reference. More information is provided in Appendix IV.



**Figure 4-94. Location of ARAP Sites (Individual Permits) in Subwatershed 0604000309.** Subwatershed 060400030901 and 060400030902 boundaries are shown for reference. More information is provided in Appendix IV.

**4.2.I.iii.** Nonpoint Source Contributions.

<b>LIVESTOCK (COUNTS)</b>						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
1,370	3,145	51	5	<5	171	<5

**Table 4-51. Summary of Livestock Count Estimates in Subwatershed 0604000309.**  
According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

County	<b>INVENTORY</b>		<b>REMOVAL RATE</b>	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Dickson	174.3	174.3	1.8	7.7
Humphreys	241.2	241.2	3.7	14.4
<b>Totals</b>	<b>415.5</b>	<b>415.5</b>	<b>5.5</b>	<b>23.1</b>

**Table 4-52. Forest Acreage and Average Removal Rates (1987-1994) in Subwatershed 0604000309.**

<b>CROPS</b>	<b>TONS/ACRE/YEAR</b>
Legume (Pastureland)	
Grass (Pastureland)	1.34
Grass (Hayland)	0.25
Legumes (Hayland)	2.01
Legumes, Grass (Hayland)	0.08
Grass, Forbs, Legumes (Mixed Pasture)	1.30
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	24.68
Sorghum (Row Crops)	5.80
Soybeans (Row Crops)	23.49
Other Vegetable and Truck Crop	7.71
Conservation Reserve Program Lands	0.10
Non-Agricultural Land Use	0.00
Other Land in Farms	0.03
Farmsteads and Ranch Headquarters	0.63

**Table 4-53. Annual Estimated Total Soil Loss in Subwatershed 0604000309.**